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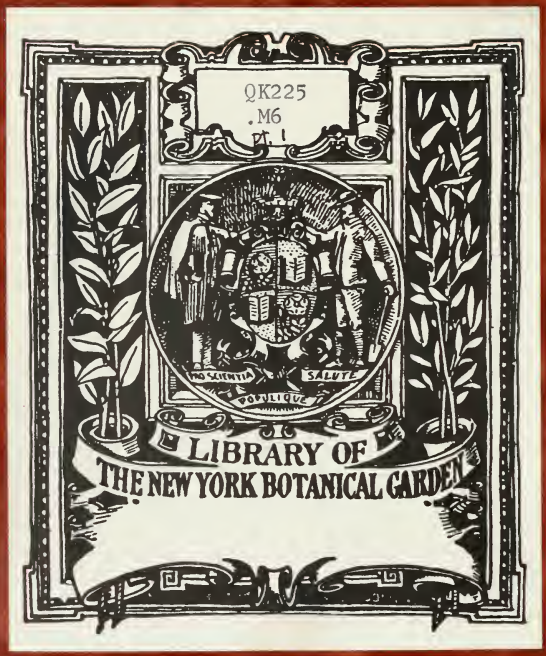
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PUBLICATION 43.

BOTANICAL SERIES. VOL. II, NO. 1.

PLANTÆ UTOWANÆ.

PLANTS COLLECTED IN BERMUDA, PORTO RICO, ST. THOMAS, CULEBRAS, SANTO DOMINGO, JAMAICA, CUBA, THE CAYMANS, COZUMEL, YUCATAN AND THE ALACRAN SHOALS. DEC. 1898 TO MAR. 1899.

THE ANTILLEAN CRUISE OF THE YACHT UTOWANA.

MR. ALLISON V. ARMOUR, Owner and Master.

BY

CHARLES FREDERICK MILLSPAUGH, M.D.

Curator Department of Botany.

PART I—Catalogue of the Species.

CHICAGO, U. S. A.

March, 1900.

LIBRARY NEW YORK BOTANICAL GARDEN

Route of the "Utowana" - - - - - - - -
Limits of the Antillean Flora .....

PLANTÆ UTOWANÆ.

CHARLES F. MILLSPAUGH, M.D.

Mr. Allison V. Armour, of Chicago—through whose generous patronage the author made his first collection in Yucatan for this Museum during December, 1894, and January, 1895—wishing to advance the knowledge of the flora of that peninsula and to afford the opportunity of correlating its vegetation with that of the coastal region of the Greater Antilles, again planned his winter cruise in 1898–1899 that it might embrace as many as possible of the more important points at which the study of the question could be profitably conducted. He therefore placed his new auxiliary steam sailing yacht "Utowana" in commission, and invited Messrs. Jordan L. Mott, Jr., and Edward S. Isham, Jr., of New York, and Mr. Edward P. Allen, photographer of this Museum, and myself as his guests.

THE ITINERARY.

December 21, 1898, was set for sailing, but, delayed by the memorable fog that hung over the east coast during the 21st, 22d and 23d, departure was not taken from the dock at the foot of West Thirty-fourth street, New York, until eight o'clock on the morning of the 24th. The wind, which had been in the west during the morning, fell in the afternoon, and using steam a course was laid from Sandy Hook for the Bermudas. During the evening and night a gale came up out of the southeast, and the next two days were spent beating against the wind and fighting the cross-sea of the Gulf Stream in weather so gloomy that satisfactory observations could not be made. Trusting to a faulty sight rather than reliable dead-reckoning, our captain missed the islands to the southward, and noon on the 27th found us sixty miles to the eastward of our intended port. As we came about, the wind, with Atlantic perversity, also shifted into the west, and we were compelled to fight our way back against even rougher water than before. During the midnight watch the seas broke over us with such force that two of our

men barely escaped being washed overboard while setting the storm-staysail.

We sighted the welcome light on St. George's at daybreak on the 28th and reached Hamilton harbor at noon. Taking one of the yacht's boats I visited a number of the islets in the bay (*collecting nos. 1–35*), and on the 29th and 30th continued work on the hills and in the boggy swales back of Paget's Landing (*36–69*). During the morning hours of the 31st an excursion was made to the famous Walsingham district (*70–115*), and the afternoon until dusk was utilized in a search of the fields and woodlands north of Hamilton (*116–139*).

We left the harbor at 1 o'clock on New Year's day and as we reached the offing, set all sail and laid a course for San Juan, Porto Rico, a distance of 840 miles, making that harbor on the morning of January 5th.

January 6th was spent in botanizing over the lowland bordering the bay at Cataño, opposite San Juan (*140–193*). January 7th a carriage was engaged and a trip taken along the military road from Rio Pedras to Caguas, whence I returned to San Juan on the evening of the 8th (*194–248*). The afternoon of the 9th was spent in the Cataño region with Mr. E. E. Heller, who had just arrived in Porto Rico to collect for the New York Botanical Garden (*249–259*). On the 10th, again in company with Mr. Heller, the sand-dune coast region at Santurce was visited (*260–305*), and on the 11th we worked the foothills near Bayamon (*306–326, 338–358*) collecting at Cataño (*327–337*) while awaiting the departure of the train for that field.

The shores of the bay of San Juan are quite distinct in their flora from the seashore, the sandy beach failing to yield those characteristic Antillean forms so predominant everywhere on the true sea coast: Cakile maritima, Ernodea littoralis, Suriana maritima, Tournefortia gnaphalodes, Sesuvium portulacastrum, and Euphorbia buxifolia, all of which are plentiful just outside the entrance. The flora of the bay shores consists principally of Wedelia trilobata, Bidens leucantha, Coccoloba uvifera, and Ipomœa pes-capræ.

During our stay in this region heavy showers fell upon an average of every three hours; but as they lasted only a few moments, and the herbage dried almost as soon as the rain ceased, they interfered little with collecting.

We left the harbor on the 16th, and steaming eastward against a heavy wind, spent the night making seventy odd miles to the bay

of St. Thomas, which we entered early on the morning of the 17th. Here the day was utilized in collecting about the bay shore and on the hillsides south of Charlotte Amalia (*364–502*). At four o'clock on the morning of the 18th—having been so fortunate as to secure the same man who acted as a guide for Baron Eggers in his St. Thomas trips—I started across the island by way of the high mountain back of the town. My guide being familiar with the ferny nooks and deep woods where Baron Eggers found many of his more interesting species, the trip proved a very profitable one (*503–565*) and greatly enhanced the value of so short a stay at this island.

We sailed at noon of the same day for the island of Culebras, a part of our new Porto Rican territory, and aided now by the trade winds, we made the twenty-five miles handsomely before too dark to effect an entrance to the excellent harbor on its southern coast.

January 19th was spent in work on the northern shores of the bay (*566–635*), and the morning of the 20th on the seashore southwest of the bay (*636–649*). The shores of the island are clothed with a dense growth of cacti, agaves and low-spreading rubiaceous and leguminous shrubs covered with bromeliads; the cleared fields in from the coast are, however, fertile and productive, and in the pastures the backs only of the cattle can be seen as they graze upon the tall, fresh guinea grass.

At 3 p. m. we weighed anchor, left the harbor, and passing to the eastward rounded Viejas Island and spent the night at sea, reaching Playa, the port of Ponce, at seven the following morning. Taking the sailing launch we visited Ratones Island (*650–661*), which is being so rapidly washed away by the force of the sea that living clumps of Suriana are still standing in the water nearly a quarter of a mile from the receding shore. I walked back along the shore, collecting the coastal forms (*662–684*); and in the morning we left the port for Guanica, which was reached at noon. Guanica hill proved a very interesting collecting ground (*685–710*), and the plain and parched tangle of chapparal on the bay shore well repaid the exertion of an entire hot day on the 22d (*711–754* and *755–768*).

Leaving here at ten o'clock in the evening, we arrived off Mona Island at the same hour on the 23d, and drew into an anchorage at El Sardinero, where we attempted to make a landing in the dinghy, but without success, the waves being too high to allow us to approach the shore in safety. Reluctantly this coast was abandoned and we moved around the spit into Santa Isabella bay. Here another attempt was made which was again unsuccessful, and we were compelled to bear away for our next port—

San Domingo—which we reached on the morning of the 24th. I took a carriage and spent the day driving about the environs of the city (*769–883*). In the early evening we sailed for Port Antonio, on the northeast coast of Jamaica, which we reached on the morning of the 26th. From here a trip was made to Kingston by rail, which afforded me a valued opportunity to visit the Hope Botanical Gardens, and meet the genial Mr. William Fawcett, Director of the Public Gardens and Plantations, but left no time for collecting as we returned to Port Antonio at noon the following day. The 29th was occupied in field work about Port Antonio (*884–1000*), and in the evening we sailed for Santiago de Cuba, reaching there at noon on the 30th. The afternoon was devoted to mails from home, and the 31st to a trip down the coast in the yacht to visit the wrecks of the Viscaya and Almirante Oquendo.

February 1st was occupied in a study of the arid shores of the bay, which at this season present very few flowering plants (*1001–1024*); and the 2d in a trip to El Caney (*1025–1041*) and San Juan Hill (*1042–1056*). So little rain falls in this region at this season, that the scanty flora sustains insufficient characters to warrant extended collecting. On the 3d and 4th we visited Morro Castle (*1057–1103*) and "The Ovens" (*1104–1126*), the latter a gulch to the north, in whose rocky sides are many rounded cavities, large and small, which give rise to the name.

At this point in the cruise Mr. Mott was called home by business necessities, and as better accommodations could be secured on a vessel leaving Port Antonio, our yacht was headed again for that place. This gave me a further opportunity to collect there, and the morning of the 8th was spent in a glen near the village (*1127–1149*). At 5 P. M. we followed Mr. Mott's steamer out of the bay and laid a course for Cuba at the point where the Cristobal Colon was driven ashore. We sighted her at about ten the following morning, and while the Utowana lay off and on, we boarded the wreck and spent some time upon her side.

At Cayman Brac our next stopping place, we found an anchorage on the north coast close to the rocky shore, near a little settlement known as "The Creek." Here, in company with one of the natives, I spent the afternoon along the beach and on the plateau above (*1150–1192*).

A calm delightful evening followed and we retired early with a quiet sea, only to be rudely awakened at eleven o'clock by a horrible thumping. Rushing on deck we found the yacht in a screaming "norther," which, coming up without warning, was dash-

ing the sea against the iron-bound coast with terrible fury directly under our stern. As soon as sufficient steam could be raised an attempt was made to leave the dangerous anchorage, but before the screw could gain a purchase upon the foam-lashed water our ship struck the rocks, once, twice, thrice, and in the awful suspense of the next moment, when we expected that each second would be our last, the leadsman's welcome cry of "moving ahead, sir," greeted us, sweet as a voice from home. In a few minutes more we were out of danger and the yacht was beating to sea like a frightened thing. Gaining the offing, we squared around the east end of the island and came to anchor again under its lee, where we found protection from the storm. We shifted to a point farther west the next morning and resumed collecting (*1193-1219*). April and May being the principal floral months here, little was to be expected of plants in form for collection in February, and a tramp of several miles the following day resulted in only eighteen species worthy of preservation (*1220–1237*).

Leaving Cayman Brac on the 11th, we ran across to Little Cayman, skirting its entire south shore in search of a safe landing-place, but finding none we finally stood off and ran to the southwest, reaching the harbor at Georgetown, Grand Cayman, after dark. Daylight brought the health officer, who with many expressions of regret forbade us to land, as our last port was reported to be infected with measles. However on being informed of the nature of our visit, he consulted with the authorities ashore and the Governor himself came out to us and courteously gave me permission to land at least a mile above the village, but cautioned me to keep away from any person or dwelling that I might encounter. Availing myself of the privilege I made an extended trip along the shore north of the port and into the borders of the lagoon (*1238–1265*).

We made an attempt in the afternoon with our sailing launch to round Jackson Point south of the town in order to further search the shores, but the wind gave place to heavy rain squalls and we were compelled to work back to the yacht. These weather conditions were followed by a dead calm and other indications of a norther. At 5 P. M. a rising wind began to steadily shift to the westward, and at six it became strong and tended northward, where it continued during the night. In the early morning rain again fell in torrents, the wind instantly shifted dead north and blew a gale, and again we were caught on a lee shore. All hands were promptly on deck, and with steam and sail we crept away from danger. As the other shipping in the open roadstead made frantic attempts to secure safety

in flight, one pretty white schooner that lay near us was quickly blown high up on the rocks a wreck, and a large trading vessel from Belize, dragging her anchor, threatened to follow, but finally escaped with us around the point into the quiet water of Spot Bay. We were thus driven by the storm to the very point we had failed to reach the day before, a place which, on going ashore, proved of particular interest in its flora. Eighty-eight numbers (*1266–1354*) were secured here. As I regained the yacht, which was rolling heavily in the sea that now ran in from the point, I arranged the plants in driers on my stateroom floor, a gymnastic feat in the performance of which I had become quite proficient.

Tuesday, February 14—albeit a drizzling rain fell constantly during the morning—Mr. Armour, Mr. Isham and myself made an extended excursion into the interior of the island (*1355–1391*), where we encountered the great pest of the place, mosquitoes. While I am unacquainted with the entomological characteristics of this particular species, the horrible torture to which we ungraciously submitted on this trip I had never before experienced. Swarms of the large black creatures settled upon us drawing blood instantly; they refused to be brushed away, only yielding to death. As we neared the center of the island they actually drove us back, and with swollen faces, hands and necks, we fled to the open, conquered and in torment. I was told by a merchant of Georgetown that in May and June these insects became so numerous and terrible that he always closed up his business and left the island. He further vouched for the fact that they killed many head of cattle during the summer and rendered the place uninhabitable except to those people hardened to their poison.

In the early evening the weather signs warned us that the south coast was in its turn becoming dangerous, and learning that the norther had abated we ran around to our old anchorage off Georgetown. Here we learned that the Board of Health had decided to raise our quarantine and we were invited ashore.

We found the main street along the water front a wreck from the storm and littered with debris from shore and sea. We were told that the norther had proved the worst the inhabitants had experienced for twenty years. After an hour spent in collecting about the streets and vacant lots, both of which are noticeably free from the usual weeds of civilization (*1392–1406*), I was summoned aboard by the yacht's whistle, for the wind had again shifted and the anchorage was becoming untenable. All sail was quickly set and we left this storm-beaten group on a course for the Isle of Pines.

We landed at Pedernales Point at 3 P. M. of the 16th, and worked over the coastal field (*1407–1445*) until evening, when we left for the extreme western point of Cuba—Cape Corientes. Reaching the anchorage off the cape at 8 A. M. we went ashore and began our search of the coast for a mile or so each side of our landing-place. The coast here is of sharp, flinty coral, dry and forbidding, and the vegetation parched and almost characterless at this season. Exhaustive search until evening only resulted in twenty-two numbers (*1446–1467*). Leaving on a course S. W. ¼ W., we made a delightful sail of 150 miles to the Island of Cozumel, 10 miles from the east coast of Yucatan, and dropped anchor off the village of San Miguel at noon of Saturday, February 18th. We found the conditions about as they were four years before when with the yacht "Ituna" we visited the island. In the afternoon I made an exhaustive search of the open woodland along the coast north of the village (*1468–1508*). The 19th was spent in field work at the Caleta, a bight in the coral coast about three miles south of San Miguel, where the woodlands are moist (*1509–1537*).

In the evening our vessel rested as if in dry dock on the still, transparent waters of the only quiet anchorage on the whole Yucatan coast, and we enjoyed a calm delightful night of refreshing sleep. Early the next morning I started for an extended trip to the interior of the island accompanied by a Maya guide, an intelligent fellow who proved of great assistance in recalling to my memory the Indian names of such plants as I had collected here before, and in naming new ones as they were gathered (*1538–1575*). Our anchorage was shifted in the evening to the shallow waters off the north shore in preparation for the next day's work.

Soon after sunrise of the 21st the entire party, well equipped with food and water, disembarked from the steam launch at the northeast point of the island for one of the most severe tramps of the cruise, a journey over ragged coral and deep sand, and through tangles of Sabal, Coccoloba, Suriana and Ernodea, to a ruined Maya temple eight miles down the east coast, which we understood had never before been visited. This coast is of great interest to the botanist, as the Gulf Stream sweeps its sands leaving masses of driftwood even to great tree trunks scattered along its beach, and would doubtless offer many interesting ecological lessons to one who could spend a month here during May, June or July (*1576–1612*).

In order that a full day's work might be done at Mugeres Island, 10 miles north from our anchorage, our captain was instructed

to get under way at 4 A. M., at which hour we were suddenly awakened by a violent shock. In attempting to leave the shallows we had struck a coral head and were now thumping and grinding into its yielding crown with every wave of the sea. For four long hours every means was tried without avail to extricate the ship from its position, until just as we had about decided that the beautiful fabric was destined to remain aground until totally wrecked by a "norther," a roller considerably higher than any of its predecessors came over the sea and upon its crest we quietly slid into deep water.

These repeated dangers convinced us that our vessel was too large to safely lie about such shores; we therefore abandoned our intention of stopping at harborless Mugeres and passed on to the eastward.

Progreso, the seaport of Yucatan, was reached about noon on the 23d, whence we proceeded by train to Merida 25 miles inland, where we were entertained at the pretty Quinta of the American Consul, Mr. Edward H. Thompson. The objective point in Yucatan to be visited by the party was the ruins of the ancient Maya city, Chichen Itza, about sixty miles farther inland by rail and native wagon. In order that I might visit Dr. Geo. F. Gaumer who for the past four years had been collecting botanical material for this Museum, I started from Merida a day in advance of the party. From Izamal I was obliged to travel seven leagues in a volan that I might reach Tunkas and join the others who were to arrive direct from Merida by rail. The distance was covered in the unusually quick time of three hours, over a road so dry and hot that the cochero was compelled to drench the wheels at each watering-place to keep the tires from dropping off the felloes.

The night at Tunkas was spent in the only accommodations of the village—two bare rooms, whose sole furniture consisted of wooden pegs from which we hung the hammocks providently carried with us.

Our breakfast the next morning consisted solely of chocolate and bread, a poor fortification for the five-league ride over the most rocky of roads in that most "rocky" of vehicles—the volan coché.

At Chichen Itza we spent four days at the hacienda of Mr. Thompson, visiting the ruins and incidentally collecting such plants as I had not secured there on my previous trips (*1616–1648*), and on Friday, March 3d, we returned to Tunkas. The night train from here proceeded only two leagues to Temax, a village so destitute of accommodations for travelers that we sought the privilege of hanging our hammocks in the railroad freight house. Here we

were lulled to sleep by the pattering fall of countless disappointed fleas which, in their vain attempts to reach us, dropped back upon the papers we had spread beneath our hammocks as a rug.

At half after four in the morning we again boarded the train and reached Merida at half past nine. Later we enjoyed a swim in Mr. Thompson's irrigating tank and regained the yacht in the early evening. Divesting ourselves of our clothing on deck, that we might not contaminate our cabins with the various predacious insects with which we were covered, we soon luxuriated in cleanliness and creature comforts.

Rowing ashore at 4 A. M., March 5th, I spent the day tramping over two leagues of the lagoon border and arid scrub land south of Progreso (*1643–1737*).

A condition peculiar in Yucatan existed at the time of this trip. Instead of the usual northeast trades the wind had been prevalent in the southeast, bringing more rain than had been known in the peninsula for twenty years. This rendered the herbage and shrubbery of the wooded lands greener, and blooming plants more plentiful than I had seen in my previous visits, and served to render my collections at Chichen Itza and on the arid plains near Progreso especially valuable. The "northers" did not begin on the Yucatan coast this year until our first experience with them at Cayman Brac on the 8th of February. The second one, which drove us out of the offing at Georgetown, Grand Cayman, on the 13th, dropped the temperature of Yucatan to 41° F., the coldest known to the present generation. These moisture and temperature conditions formed an era in the life of the inhabitants that will be a tradition for decades to come.

I returned to the dock about 5 P. M. The launch awaited me at a short distance, tossing on an angry sea raised since morning by a steadily increasing northeast wind to such a height that the Captain of the Port expostulated with us for attempting to make the four miles to the anchorage of the yacht. However with Mr. Armour at the helm, we started off into the wild wind and waves against which we fought our way to the vessel. As we drew near, the entire crew gathered at the rail and watched our coming with anxious faces. We finally gained the deck by leaping from the crest of a rising wave into the arms of the waiting officers.

The captain, fearing a shift of the wind to the north, made immediate preparations to raise the anchor and put to sea, which all steamers in the offing were doing as rapidly as possible. At eight o'clock the wind veered full in the north, the barometer rose, the thermometer fell, and another "norther" burst upon us. It blew with fury all

that night and all the following day, during which we lay hove to about 25 miles from the coast.

Monday night was spent in discomfort until about five in the morning, when the wind died down though the sea remained extremely rough and choppy. At eight o'clock we shaped our course as true as dead reckoning admitted, for the Alacran Shoals and spent the day searching for them. Circling sea-birds finally indicated their presence, and an hour later we dropped anchor in comparatively quiet water under the lee of Perez Island where we spent the night.

Mr. Armour accompanied me ashore before sunrise (March 8th), where a thorough canvass was made of every plant species (*1738–1757*). Later the entire party visited the other islets: Pajaros (*1758–1764*), Chica and Allison (*1766–1771*), collecting and photographing, and shooting snipe for the larder.

The sea was too heavy to permit landing at the northernmost islet of the shoal, so we drew away from the dangerous waters as evening fell, and shaped our course almost due north for the jetties of the Mississippi.

With a strong wind and all plain sail set we averaged 8½ knots through the night, increasing to 10 knots during the following morning and 14 in the afternoon, when at five o'clock a sudden and frightful shock thrilled the ship. Had we found rocks in water known to be 1,500 fathoms deep! We rushed to the rail and found the sea brown with blood; we had struck a sleeping whale full broadside, evidently wounding him severely. He rose astern accompanied by his mate, where both blew and sank. The shock must have weakened our fore top-mast, for an hour later it broke short off at the masthead and went by the board.

In this crippled condition, but without further accident, we entered the Mississippi at 2:30 on the afternoon of the 10th of March, and steaming up the 100 miles of river during the night, reached the dock at New Orleans at 7 A. M., March 11th, our eventful and profitable cruise ended.

The foregoing outline is chiefly intended to fix the dates and extent of time devoted to each collecting station, and to give some slight idea of the weather conditions that prevail in the Antilles at this season of the year. A detailed account of the work and observations made of existing conditions at each locality will be issued as a second part of this publication, which will also include the plates and indices.

In the determination and classification of the species in the following catalogue, the herbaria at Columbia and Harvard Universities were consulted by the author, and work in their special groups was cheerfully undertaken by the following botanists: Prof. B. L. Robinson, and Messrs. J. M. Greenman and M. L. Fernald, of the Gray Herbarium; Profs. N. L. Britton and L. M. Underwood, Dr. J. K. Small and Miss Anna Murray Vail, of the New York Botanical Garden; Prof. F. Lamson-Scribner, and Mr. Charles L. Pollard, of the United States National Herbarium; and Mr. Geo. E. Davenport, Mr. Edwin B. Uline, and Mr. J. B. Ellis, each of whom are credited under the orders in which their aid was given. My thanks are due to these botanists for their generous co-operation, and also to Prof. Dr. I. Urban, of Berlin, for type portions of his Antillean species of Euphorbia, and Prof. Dr. Anton Heimerl, of Vienna, for notes upon the Nyctaginaceæ.

Chicago, January 20, 1900.

Plants Collected by the Author in Bermuda, Porto Rico, St. Thomas, San Domingo, Jamaica, Cuba, the Caymans, Cozumel and Yucatan, December, 1898, to March, 1899.

ASPERGILLACEÆ.

Meliola Caymanensis E. & E. sp. nov. Plate xlix.

Epiphyllous. Mycelium forming minute (1 mm. or less) round black spots, subreticulately branched, threads 6-7 μ diam., capitate hyphopodia globose, subsessile 8 μ diam., mucronate hyphopodia ampulliform, prolonged above into a cylindrical tip 7-8 μ long, not abundant; perithecia 200-250 μ diam. collapsing, 2-6 on a single patch of mycelium; asci obovate, subsessile 75-85 x 20-25 μ, 2-4-spored, sporidia subfasciculate, oblong-cylindrical, 4 septate, not strongly constricted 25-30 x 11-13 μ.

On leaves of Pharbitis cathartica (Poir) Chois. from the coast of Grand Cayman Island, near Georgetown (1403 part).

MICROTHYRIACEÆ.

Asterella Erithalidis E. & E. sp. nov. Plate l.

Hypophyllous. Mycelium loose, spreading over the lower surface of the leaf without forming definite spots; threads sparingly reticulate-branched, capitate hyphopodia obovate, 15-20 x 5 μ, mucronate hyphopodia elongated conical 12-15 x 5-6 μ; bristles arising from the mycelium 150-250 x 5 μ; perithecia globose membranaceous, subastomous, 80-100 μ diam., asci oblong, 20-30 x 8-10 μ; sporidia subbiseriate oblong, uniseptate, hyaline, scarcely constricted 6-8 x 3-3.5 μ.

On leaves of Erithalis angustifolia de C., shore of Grand Cayman, north of Georgetown (1251 part).

Asterella crustacea E. & E. sp. nov. Plate li.

Epiphyllous. Mycelium subcrustose, forming black orbicular patches 2-3 mm. diam., reticulately branched without hyphopodia or bristles; perithecia lenticular thin, flat, 2.5-3.3 mm. diam., ostiola papilliform, sometimes compressed; asci clavate oblong nearly sessile 70-80 x 15-20 μ. Sporidia obpiriform, uniseptate, hyaline at first and with a hyaline envelope, strongly constricted, upper cell elliptical and broader, lower cell obconical 20-26 x 9-11 μ, becoming brown.

On leaves of Psidium Guajava L. from the center of the island of Grand Cayman (1378 part).

ASTERIDIUM MONILIFORME E. & E. Jour. Trinidad. Field Nat. Club., 1894.

On leaves of Tetrapteris Mexicana H. & A. from near San Miguel, Cozumel (1484 part).

DOTHIDIACEÆ.

PHYLLACHORA GRAMINIS (Pers.) Fckl. Symb : 216.

Sphæria graminis Pers. On leaves of Panicum insulare (L.) Mey. Along the bay shore at Charlotte Amalia, St. Thomas (on 368).

USTILAGINACEÆ.

Sorosporium Borrichiæ E. & E. sp. nov. Plate lii.

Glomerules globose 30-80 μ diam. composed of numerous small (3 μ) globose, smooth, dark brown spores, nearly black in the mass.

Filling the flower-heads and destroying the flowers of Borrichia argentea de C., from the east coast of the island of Cozumel (1586 part).

SPHÆROIDIACEÆ.

Vermicularia atricha E. & E. sp. nov. Plate liii.

Spots orbicular, rust-colored, 2-4 mm. diam., with a darker center, perithecia amphigenous, innate minute (75-100 μ), perforated above, bristles obsolete; sporules lunate, acute 3-4-nucleate, 15-20 x 3 μ.

On Petiveria alliacea L. at Caguas, Porto Rico (204 part).

UREDINACEÆ.

Uredo cupulata E. & E. sp. nov. Plate liv.

Spots reddish-brown, irregular in shape, 3-5 mm. diam., with a thickened raised margin, amphigenous. Sori amphigenous, crowded on the spots, more abundant below, mostly elliptical, enclosed in a thin membrane soon dehiscent above, giving the sori a cup-shaped pezizoid appearance ; spores elliptical ovate 16-22 x 12-20 μ or globose 16 x 20 μ, pale yellow, with a rather thick tuberculo-echinulate epispore, scantily paraphysate.

Another form of the same, differing only in the more indistinct poorly defined spots without any raised margin.

LYCOPERDACEÆ.

GEASTER LIMBATUS Fr. Syst. Mycol. 3:15. Plate lv, fig. 4.

On ground under shrubs growing on hummock in a bog near Paget's Landing, Bermuda (56).

POLYPORACEÆ.

TRAMETES VENUSTUS Berk. Lond. Jour. Bot. 1845:55. Plate lv, fig. 3.

On dead wood on ground, moist woods center of the island of Cozumel (1613).

PORIA VINCTA Berk ? Fung. St. Dom. 26:5.

A thick form, probably of this species, on under side of dead limbs near Pisté, Yucatan.

Polystictus albocervinus Berk. Lond. Jour. Bot. 1856:234. Plate lv, fig. 1.

On standing dead trees (leguminous) near the Caleta, Cozumel (1559).

Polystictus sanguineus (Linn.) Mey. Esseq: 304. Plate lv, fig. 2.

Boletus sanguineus Linn. On trunks of dead coco trees, at The Creek, Cayman Brac (1163); south shore Grand Cayman (1357). On living and dead coco trees, Cozumel (1614).

Polyporus similis Berk. Fung. Braz: 6.

On standing dead trees, near the Caleta, Cozumel (1615).

AGARICACEÆ.

Lentinus Nicaraguensis B. & C. N. Pac. Expl: 85. Plate lv, fig. 5.

On dead wood under edge of log, woodlands near Spot Bay, Grand Cayman (1356). In same situation, center of Cozumel, and near Pisté, Yucatan.

SELAGINELLACEÆ.

Selaginella cuspidata Link. Fil. Hort. Berol.: 158 (1841).

Plentiful near the cenote Nohoch Chen, Chichen Itza, Yucatan (1620), called by the Mayas X-mux-coc, "dried pectoral," although no use is made of the plant in asthma, difficult breathing, or kindred complaints by the Mayas of the present day so far as I am able to determine. It is used as a remedy in catarrhal affections of the chest when expectoration is profuse. A literal translation of the Maya name is *mux*—dried or desiccated; *coc*—asthma, difficult or wheezy breathing, the prefix *X* simply denoting the feminine gender. Selaginella longispicata Underw. Field Col. Mus. Bot., 1:287, is also called X-mux-coc; the two species are used indiscriminately in domestic medication.

PTERIDOPHYTA.*

POLYPODIACEÆ.

Aspidium scolopendriodes (Linn.) Mett. Aspid. 97.

Polypodium L. *Nephrodium* Hook. *Dryopteris* Ktze. Shady rock clefts near Port Antonio, Jamaica (912, 1133).

Good characteristic specimens of this species which holds a most unsatisfactory position. I have not yet been able to find any trace of an indusium in any specimens that I have seen. If one ever exists it must be "very fugacious" indeed. Its affinities are nearer to *Goniopteris*, where Presl placed it.

Aspidium molle (Jacq.) Swartz Syn. 49.

Polypodium Jacq., *Lastrea* Bory, *Nephrodium* Desv., *Polypodium parasiticum* Linn. *Dryopteris parasitica* (L.) Ktze., *Nephrodium parasiticum* (L.) Shimek. I have not been able to satisfy myself that *A. parasiticum* (L.) Swtz. (*Polypodium parasiticum* Linn.) is identical with

*By Mr. George E. Davenport.

this species. Swartz kept them apart, and the figure in Rhede's Hort. Malab. t. 17, on which Linnæus based his species, might very well stand for a much larger and different fern than our A. molle.

Moist banks at Caguas, Porto Rico (243) and on the mountain above Charlotte Amalia, St. Thomas (540), No. 540 is a fine specimen with caudiciform rootstock.

ASPIDIUM PATENS Swtz. Syn. Fil. 49.

Nephrodium Desv., *Dryopteris* Ktze. Clefts of a ruined cellar wall on an islet in the bay of Hamilton (23) and in the water of a bog at Paget's (55) Bermuda. Exposed rocks of a railway cut at Bayamon, Porto Rico (344, 350), both juvenile. Mountain road in deep woods above Charlotte Amalia, St. Thomas (542). Roadside (887) and moist rocks (901, 904, 906, 932, 954, 1131) near Port Antonio, Jamaica. Crevice of the masonry in the throat of an old well at Georgetown, Grand Cayman (1399) one individual only. Deep woodland, center of the island of Cozumel (1561), rare.

This set forms a most interesting and valuable series of forms in all stages of development, some of which would be difficult to separate from A. molle but for the creeping rootstock.

ASPIDIUM CICUTARIUM (L.) Swtz. Syn. Fil. 51.

Polypodium Linn. *Sagenia* Presl, "veins arcuate by anastomosing." *Nephrodium* Baker, *Dryopteris* Ktze.

Rich soil in a deeply shaded glen near Port Antonio, Jamaica (1132). A single imperfect but quite characteristic frond of this fine species.

NEPHROLEPIS ACUTA (Schkr.) Presl. Pterid. 1836.

Aspidium Schkr. Sterile plants of a strongly pubescent form, found in rich soil under an overhanging bank (909), and full fruited tall form in a shady ravine (1000) near Port Antonio, Jamaica.

NEPHROLEPIS EXALTATA (L.) Schott Gen. Fil. 1834.

Polypodium Linn. Walls of a ruined cellar on an islet in the bay of Hamilton (22), and on an island in a bog at Paget's (59), Bermuda. Wooded hillside in a glen near Port Antonio, Jamaica (916, 1141). On a hummock in an upland swamp, center of the island of Grand Cayman (1376).

Although the above specimens vary greatly in size, they fail to present characters that might enable me to separate them.

DAVALLIA ACULEATA (L.) Smith. Mem. Acad. Turin 5: 415.

Adiantum Linn. Rich soil under the trees of a Guava orchard near Port Antonio, Jamaica (1142).

ASPLENIUM DENTATUM Linn. Sp. Pl. 1540.

On stone fences under the shade of trees (893) near Port Antonio Jamaica.

These specimens have the pinnæ much closer than in our slender Florida form, and are quite unlike the species as mostly known to American botanists; they however fit well the fine series of forms in

the Gray Herbarium, Cambridge. No. 1441 from pockets in the coral sea-wall of Pedernales Point, Isle of Pines, Cuba, is in every way a much larger and coarser plant than the Floridian form.

Asplenium pumilum Swtz. Fl. Ind. Occ. 3: 1610.

Under the edge of loose stones in open woods near the northwest point of Cozumel (1485).

The specimens show considerable variation in the serration of the margins.

Asplenium Trichomanes Linn. Sp. Pl. 1540.

Small plants from the crevices of a low rock ledge near a bog at Paget's, Bermuda (49).

Blechnum occidentale Linn. Sp. Pl. 1534.

Damp roadside bank near Caguas, Porto Rico (244). Deep moist high mountain woods above Charlotte Amalia, St. Thomas (521, 544, 548, 550). Rich woods near Port Antonio, Jamaica (1145). A fine series of specimens showing the species to good advantage.

Woodwardia radicans Smith, Mem. Acad. Turin 5: 412.

Rich soil under overhanging banks near Port Antonio, Jamaica, (966). Fronds sterile, 114 cm. long.

Gymnogramma* calomelanos (L.) Kaulf. Enum. Fil. 76.

Acrostichum Linn. Rich moist banks (shaded by rank low growth) near Caguas (229), open rocky bank, a railway cut near Bayamon (311), Porto Rico.

The first is a large weak growth, the second coriacious and very near *var.* tartarea (L.) Bom. & Ch. Fil. 236, and apparently uniting it with the species. I quite agree with Shimek (Ferns Nic. 191) that with a full series of forms no specific differences exist between G. calomelanos and G. tartarea Desv., and the above localities for Dr. Millspaugh's specimens seem to bear out Prof. Shimek's remark: "The difference in texture seems to be due to surroundings. Both forms are more coriaceous when growing in barren, exposed places.

Cheilanthes microphylla (Swtz.) Syn. Fil. 127.

Adiantum Swtz. Prod. On stone fences under shade of trees near Port Antonio, Jamaica (894). On dry ground in open scrublands near The Ovens, Santiago de Cuba (1106), the latter suffering from the dry conditions.

Adiantum bellum Walsingense Gilbert. Bull. Torr. Club. 25: 596.

In the wall crevices of an old cellar on an islet in Hamilton Bay (18) and on the margin of a bog near Paget's (42, 55 in part), Bermuda.

If I am correct in this determination (and the specimens agree with those I have from Mr. Gilbert), the published descriptions need considerable revision: In the only two fronds I have of normal A. bellum, and for which I am indebted to Mr. Gilbert, the pinnules are

*Original orthography. *Gymnogramme* of Kunze Flora.

firmly adherent, and are mostly attached to the pedicel by a "short y-shaped furcation," as described by Moore, while in Mr. Gilbert's specimens of the variety, as well as in these of Dr. Millspaugh, there is at least a partial articulation as seen in the falling away of some deciduous pinnules, and the leaving behind of either a blunt apex, or a very short one-sided attempt at furcation.

ADIANTUM CRISTATUM Linn. Sp. Pl. 1558.

Moist hillsides near Bayamon, Porto Rico (356).

ADIANTUM DELTOIDEUM Swtz. Prod. 134.

In the crevices of the dry walls of Diego Columbus' Castle, San Domingo (769). In a like situation on the walls of Morro Castle (1096, 1107, 1108), Santiago de Cuba; the latter station producing especially large and fine plants.

ADIANTUM OBLIQUUM INTERMEDIUM (Swtz.) Shimek, Ferns Nic. 145.

A. intermedium Swtz. Prof. Shimek (l. c. pp. 142-145, pl. 6-7) has, it seems to me, by an admirable series of figures, shown quite clearly the difficulty of keeping *A. intermedium*, *A. Kaulfussii* Kunze and *A. obliquum* H. & G. longer apart, and my own series of specimens, and the following plants, certainly appear to confirm his judgment.

Deep rich woods on the mountain back of Charlotte Amalia, St. Thomas (549), and in rich shady woodlands near Port Antonio, Jamaica (1146).

ADIANTUM PULVERULENTUM Linn. Sp. Pl. 1559.

Rocky well-shaded ravine (907), moist deep glen (1134, 1147) and under a moist overhanging bank (1788) near Port Antonio, Jamaica.

This whole series shows much variation, while 1788 has some sterile fronds greatly resembling A. obliquum intermedium.

ADIANTUM TENERUM Swtz. Prod. 135.

On dry rocks east of the river near San Domingo City (811), and in rich soil of a shaded glen near Port Antonio, Jamaica (905).

The specimens plainly show that the latter situation is the healthier for this species, for while the plant is fresh and clean, retaining its leaflet, the former is dry and has hardly a leaflet remaining on its depauperate stems.

PTERIS AQUILINA Linn. Sp. Pl. 1533.

On a hummock in a bog near Paget's, Bermuda (57).

The segments of this form are narrow, and the plant approaches variety caudata, but is only slightly pubescent.

PTERIS AQUILINA CAUDATA (L.) Hooker, Spec. 2:1858.

P. caudata Linn. In open moist woods in the center of the island, Cozumel (1551, 1565), where it is called X-ual-kanil, "yellow fly-brush," probably from its use for the purpose of keeping off flies.

PTERIS LONGIFOLIA Linn. Sp. Pl. 1531.

Rich, moist soil on hillsides near Bayamon, Porto Rico (310).

Frequent on dry rocks near San Domingo city (812, 816). In rich soil of a rocky glen near Port Antonio, Jamaica (897, 935, 1789, 1790).

The above specimens are mostly rigid, pubescent forms, of which 816 is very large; but 812 is quite flaccid, tender and sterile.

No. 1789 is a small plant having two of its sterile fronds with apical pinnæ suppressed, the upper lateral pinnæ on one of them much elongated, and one small frond with the upper pair of pinnæ much elongated and the terminal one dwarfed into a small, roundish cordate apex.

No. 1790 is an unusually interesting plant, showing one frond with a stipe a foot long bearing above several pairs of deeply pinnatifid pinnæ: The whole frond young and tender and resembling in form, texture and pubescence a young Aspidium patens. This frond, if detached from the parent plant, would never be considered to belong to the species by any one. It is a remarkable variation similar to one described* as having been found in Polypodium pellucidum.

Polypodium achilleæfolium Kaulf. En. Fil. 116.

Rich, open field near Port Antonio, Jamaica (911).

The specimens do not fully answer to the description in Synopsis Filicum (H. & B. 388), but agree so well with the illustration of this species in Kunze's supplement to Schkuhr's Farnnkraüter, t. 43, f. 2, that I am inclined to place them here.

Polypodium aureum Linn. Syst. Nat. 2:692.

Deep mountain woods above Charlotte Amalia, St. Thomas (557). Texture thin, areoles with flattened, free veinlets.

Polypodium lycopodioides Linn. Syst. Nat. 2:691.

Climbing Sabal trees near the Caleta, Cozumel (1534).

Polypodium pectinatum Linn. Syst. Nat. 2:691.

Rare, in crotches of low trees near Port Antonio, Jamaica (896).

Polypodium Phyllitidis Linn. loc. cit.

In the crotch of a low tree on the high mountain back of Charlotte Amalia, St. Thomas (546). On an old stump near San Domingo City (813). On trees near Port Antonio, Jamaica (999).

The only really distinctive character that I have been able to find between this species and P. repens is in the rootstalk, and where this is wanting it is not always certain in placing the specimens, as the venation varies in different, and sometimes in the same plants. Fournier, Mex. Pl. Crypt. 85 makes P. repens Mett. a variety of this species, and Shimek considered it a synonym.

I have placed the above specimens here on account of their very stout, almost globular rootstalk; the venation in some instances corresponds to that of *repens*, and in others to typical *Phyllitidis*. The rootstalk in *repens* should be long and slender.

Polypodium piloselloides Linn. loc cit.

Climbing the trunks and running the branches of trees, near Port Antonio, Jamaica (1143).

*The author's paper read before the Joslyn Bot. Club, Waterville, Maine, in August, 1898.

POLYPODIUM REPTANS Swtz. Fl. Ind. Occ. 1655.

Completely lining the throat of an old well near Georgetown, Grand Cayman (1398). Plants mostly juvenile.

POLYPODIUM TETRAGONUM Swtz. loc. cit. 1760.

Moist, rich banks, foothills at Bayamon, Porto Rico (347, 351, 353). Moist, rich woods on the mountain heights above Charlotte Amalia, St. Thomas (547, 553). Rich woods near Port Antonio, Jamaica (1148), sterile, with large pinnæ.

Mr. Baker, in his recent Synopsis of Brazilian Ferns, has adopted Poiret's older name *Androgynum* for this species, but, as I have not been able to investigate this to my own satisfaction, I have retained here the Swartzian name which has been in use for nearly a century. Mettenius referred this, as well as P. reptans, to Phegopteris, in which he has been followed by Prof. D. C. Eaton and others, but I can only look upon both these as true Polypodiæ of the Goniopteris section.

POLYPODIUM THYSANOLEPIS A. Br. ex Klat. in Linn. 20:392.

Quite large specimens, on trees near Port Antonio, Jamaica (890, 1787).

POLYPODIUM VACCINIIFOLIUM Fisch. & Lang. Fil. 8, t. 7.

Climbing small saplings on a hillside near Bayamon, Porto Rico (307).

Imperfect specimens only, and somewhat doubtfully belonging here, but not safe to place elsewhere. My specimens resemble a smooth form of piloselloides.

ACROSTICHUM AUREUM Linn. Sp. Pl. 1525.

In a bog near Paget's, Bermuda (52). In a brackish marsh east of Port Antonio, Jamaica (953). Springy bog in the center of the island Grand Cayman (1377). Also seen in the open mangrove swamp between Cataño and Bayamon, Porto Rico, but could not be reached.

No. 52 presents the upper portion of fertile frond with 14 pairs of erecto-patent obtuse pinnæ and bifid apex; no. 1377 consists of 3 large sterile pinnæ on rachis a good inch in circumference, and a portion of a fertile frond with 6 pairs of pinnæ, mostly with acute or cuspidate apices, but some obtuse, a good example of the non-essential character of the apical termination. No. 953 gives portions of fertile and sterile fronds, bright green in color; pinnæ on the sterile frond long and narrow, suberect, obtuse, with cuneate stalked bases; those of the fertile frond sterile below and twice the length of the upper fertile ones.

SCHIZÆACEÆ.

ANEMIA ADIANTIFOLIA (L.) Swtz. Syn. 157.

Dry banks near Bayamon, Porto Rico (315, 358), and same situation near Port Antonio, Jamaica (910, 917). Near limestone boulders in open woods, center of the island, Cozumel (1563).

The series shows quite a range in the size of the fronds, of which those of No. 917 are very large and fine.

Anemia Wrightii Baker Syn. Fil. 435.

On limestone boulders (coraline) in open woods, center of the island, Cozumel (1564).

The specimens are excellent examples of this very slender fertile-fronded dimorphous Anemia, the sterile fronds of which might be mistaken for a delicate form of A. adiantifolia.

CYCADACEÆ.

Zamia Allison-Armourii sp. nov.

Rootstalk semifusiform, amylacious, 20 cm. long, 3-5 cm. in diameter; leaves, 5, palmose, 75 cm. long; petioles glabrous throughout, trisulcate from the base; leaflets all alternate, 16 jugal, broadly linear-lanceolate, narrowed at the base, round-pointed and slightly sharp-serrate at the apex, not falcate, prominently and distinctly 26-veined, the median 18-20 cm. long, 1.3-1.5 cm. broad, the basal and apical leaflets 16 cm. long, 1.3 cm. broad, somewhat more prominently serrate, the margins not revolute. Male strobiles in anthesis 9 cm. long, 1.5 cm. diameter, cylindrical acute at the base and apex; peduncle 5 cm. densely rusty tomentose; peltæ transversely ovate, rusty tomentose, 5 x 4 mm. arranged in 9 longitudinal rows. Type in Field Col. Mus. Herb. No. 60817.

Near Z. augustifolia and Z. Portoricensis Urb. Syll. Antill. 291, but differing entirely in general and special habit. The nearest specimen of Z. augustifolia is Wright's Cuban 1463, the leaflets of which are sub-falcate 13 x 1.8 cm., more or less 30-veined, the veins indistinct, leaf sharply serrate from near the middle.

Shady, moist banks of streams inland from San Domingo City (817). The rootstocks are gathered, boiled and eaten by the natives, who, however, have as yet made no attempt to cultivate the species.

PINACEÆ.

Juniperus Bermudiana Linn. Sp. Pl. 1039.

Throughout the Bermuda Islands. Hamilton, Paget's (4) and the bay islets (13) in full fruit. Notwithstanding the excellently differentiative treatment of this species by Dr. Maxwell T. Masters in Jour. Bot. 1899:1, I cannot specifically separate it from J. Virginiana Linn., though, in the absence of fuller specimens, I deem it best to retain the more local name. The differences shown by my fruiting specimens from many American coast specimens of Virginiana might well be due to environmental causes.

TYPHACEÆ.

Typha Domingensis (Pers.) Kunth, Enum. 3.

T. angustifolia Domingensis Pers. Margin of lagoon south of Progreso, Yucatan (1676), female spadix 14.5 x 1 cm., interspace 5.3 cm.; male spadix 24.5 cm., leaves 1 m. x .6 cm.

ALISMACEÆ.

Sagittaria lancifolia Linn. Syst. ed x: 1270.

Ditches at the base of the foothills near Bayamon, Porto Rico

(306). Leaves 35 x 11.5 cm., flowering scapes 1 meter, fruit heads flattened globose, 1.5 cm. diam.

ECHINODORUS CORDIFOLIUS (Linn.) Griseb. Gœtt. Abh. 7: 257.
Alisma cordifolia Linn. *E. rostratus* Engelm. In drying mud, margin of the lagoon south of Progreso, Yucatan (1692). A special growth of the unusual rainy season.

GRAMINACEÆ.*

COIX LACHRYMA-JOBI Linn. Sp. Pl. 972.
Roadside ditch near Caguas, Porto Rico (233), and in same situation near Port Antonio, Jamaica (976).

SORGHUM VULGARE Pers. Syn. Pl. 1: 101.
A variety of the species, but with insufficient material to characterize, gathered in open plateau near the sea on the south shore of Cayman Brac (1224).

ANTHEPHORA ELEGANS Schreb. Gras. 2: 105, t. 44.
Sandy field near Spot Bay, Grand Cayman (1269).

PASPALUM CILIATIFOLIUM Mx. Fl. Bor. Am. 1: 44.
On a dry hummock in a bog near Paget's, Bermuda (65). Spikelets 2 mm. long, ovate-elliptical obtuse, with 3-nerved outer glumes.

PASPALUM FIMBRIATUM H. B. K. Nov. Gen. et Sp. 1: 93.
Roadside near Port Antonio, Jamaica (944).

Paspalum paniculatum minor Scribn. var. nov.
Culms slender, about 4 dm. high; spikes 3-20, 1-2 cm. long; leaves about 6-10 cm. long, 5-10 mm. wide.
Dry field near Port Antonio, Jamaica (983), and roadside in Georgetown, Grand Cayman (1406).

Paspalum Schaffneri (Fourn.) Scribn. *comb. nov.* Plate lvi.
Dimorphostachys Fourn. Mex. Pl. 2: 15. Sandy pathway in open woods, northwest shore, island of Cozumel (1480). Ex. char. agrees with no. 803 coll. by E. Hall in eastern Texas, 1872.

PANICUM BARBINODE Trin. Mem. Acad. Pet. 1835: 256.
Slopes of dry hills near Bayamon (324), and along road through Guanica (727), Porto Rico.

PANICUM COLONUM Linn. Sp. Pl. 84.
Fields and pastures near La Mueda (214), railroad embankment near Bayamon (335), and ditches along the Guanica highway (732), Porto Rico. Fields along the south shore of Culebras Island (569).

PANICUM COMPACTUM Sw. Griseb. Fl. Br. W. I. 552.
Margin of a well at Chan Tzonot, Yucatan (1639).
No. 984 from ditches near Port Antonio, Jamaica, is apparently this species but is possibly referable to *P. lanatum* Sw.

*By Prof. F. Lamson-Scribner.

Panicum divaricatum Linn. Sp. Pl. Ed. 2: 86.

Mountain woods high above Charlotte Amalia, St. Thomas (519). Environs of San Domingo City (842). Low scrub land bordering the Bay of Santiago de Cuba (1015). Fields on upper plateau north side of Cayman Brac (1172). South shore of Cayman Brac on low land near the sea (1226), and low land at Pedernales Point, Isle of Pines (1422).

Panicum divaricatum latifolium (L.) Fourn. Mex. Pl. 2: 33.

P. latifolium Linn. With the previous species in St. Thomas (520).

Panicum insulare (L.) Mey. Fl. Esseq. 60.

Andropogon insulare Linn. Shores of the bay at Charlotte Amalia, St. Thomas (368, 385), and hills high above the city (539). Plateau on north side of Cayman Brac (1153), where it is known as "Bitter Grass." On the rocky plain south of the lagoon near Progreso, Yucatan (1681).

Panicum maximum Jacq. Ic. Rar. 1: t. 13.

Dry creek bed near Charlotte Amalia, St. Thomas (454).

Panicum proliferum Lam. Encyc. 4: 747a.

Old fallow field near Hamilton, Bermuda (126).

Panicum prostratum Lam. Tabl. Ency. 1: 171.

An infrequent closely prostrate species found along a path about a mile north of Guanica, Porto Rico (454).

Panicum Utowanæum Scribn. Sp. nov. Plate lvii.

A slender, glabrous and stoloniferous perennial, 2.5-5 dm. high, with narrow, elongated leaves and simple, contracted panicles 6-12 cm. long, sheaths compressed, those at the base strongly so, ligule a short ring of stiff hairs, leaves erect or spreading, 10-20 cm. long, 1-3 mm. wide, scabrous above and on the margins, very acute tapering, and becoming nearly involute towards the base, much narrower than the sheath; branchlets of the panicle more or less remote, 1-3 cm. long, appressed, spikelets glabrous, broadly lanceolate or oblong, subacute, 2 mm. long, subtended by an awnlike bristle (a continuation of the branchlet) which is minutely scabrous, somewhat flexuous and about 4 mm. long; first glume 3-nerved, obtuse one-third to nearly one-half as long as the second, clasping at the base, the second glume obtuse, two-thirds as long as the spikelet, 5-nerved, the third glume oblong-obtuse, 5-nerved, equaling or slightly exceeding the fourth glume and furnished with a hyaline palea about one-half its own length; fourth glume smooth and slightly beaked or curved at the acute apex.

No. 702, from a dry hillside near Guanica, Porto Rico, Jan. 22, 1899. Type in Field Col. Mus. Herb. No. 60702.

Related to *Panicum Reverchoni* Vasey, but much more slender and at once distinguished by its smaller spikelets and stoloniferous habit.

Syntherisma sanguinalis (L.) Dulac. Pl. Haut. Pyren.

Panicum sanguinale Linn. Railroad embankment near Bayamon

(333), and common in irrigated cane fields at Guanica (734), Porto Rico. Fields near San Domingo City (863). Rock-strewn arid plain south of Progreso, Yucatan (1700).

CAPRIOLA DACTYLON (L.) Kuntze Rev. Gen. Pl. 764.
Panicum Dactylon Linn. Old fallow field near Hamilton, Bermuda (125). On the sandbag earthworks in the fort of San Christobal, San Juan, Porto Rico (359).

ICHNANTHUS PALLENS Munro in Bth. Pl. Hongk. 414.
Panicum pallens Sw. Railroad embankment near Bayamon, Porto Rico (352).

OPLISMENUS COMPOSITUS Beauv. Agrost. 54.
Rich soil near Port Antonio, Jamaica (924).

OPLISMENUS HIRTELLUS (L.) R. & S. Syst. 2: 481.
Panicum hirtellum Linn. North shore of Cozumel Island (1483).

Chætochloa brevispica Scribn, nom. nov.
Panicum verticillatum parviflorum Doell. 1877 *non* Cenchrus parviflorus Poir. 1804, which is Chætochloa parviflora Scribn. Margin of bog at Walsingham (99) and old fallow field near Hamilton (127), Bermuda.

CHÆTOCHLOA GLAUCA (L.) Scribn. U. S. Dept. Agr. Div. Agrost. 4: 39.
Panicum glaucum Linn. *Setaria glauca* Beauv. On railroad embankment near Bayamon, Porto Rico (348).

CHÆTOCHLOA PERENNIS (Curt.) Bick. Bull. Torr. Bot. Club. 25:107.
Chamæraphis glauca perennis Curt. Growing in crevices of a coral fence at Paget's, Bermuda (45, 50).

CENCHRUS ECHINATUS Linn. Sp. Pl. 1050.
Old fallow field near Hamilton, Bermuda (134). Arid rock-strewn plain south of Progreso, Yucatan (1698).

Cenchrus echinatus brevisetus (Fourn.) Scribn. comb. nov.
Cenchrus brevisetus Fourn. Mex. Pl. 2: 50. Sandy shore field near Cataño, Porto Rico (163), same situation near Charlotte Amalia, St. Thomas (438), where it is called "Bur-grass," and near "The Ovens," Santiago de Cuba (1110).

Cenchrus insularis Scribn. sp. nov. Pl. lviii.
A rather stout, erect or ascending, branched annual 4-6 dm. high, short ciliolate ligules, narrow, lanceolate leaves, 1-10 cm. long, 5-10 mm. wide, and exserted spikes about 6 cm. long; glumes scabrous for a short distance below the spike, otherwise glabrous; leaves glabrous beneath, scabrous above, axis of the spike flexuous and finely pubescent, burs, including the bristles, about 12 mm. long, 8-10-nerved to near the middle, the divisions silky villous towards the base, about 6 mm. long, outer bristles 6-7 mm. long, purplish, and downwardly barbed, bristles near the base of the burs numerous and slender and spikelets 2-3 in each bur, about 6 mm. long, first glume,

if present, about one-half as long as the second, 1-nerved; second glume broadly ovate, obtuse, truncate, about two-thirds as long as the spikelet, 5-nerved; third glume obtuse, nearly as long as the flowering fruiting glume and with a palea nearly as long as itself, 5-nerved, palea distinctly 2-nerved and scabrous on the keels; flowering glume acute, pedicels of the burs short and densely pubescent.

This species is allied to *Cenchrus echinatus*, but the burs are larger and the bristles more numerous and much longer.

Pajaros Island. Alacran Shoals (1759). Type in Field Col. Mus. Herb. no. 61759. One plant only found, though being in full fruit others may appear from seed. This plant grew in the very center of the island where the booby nests are the thickest, and was the only representative of the species on the shoals.

The species was also found on the sandy east shore of Cozumel Island, about four miles from the northeast point; rare (1607).

Cenchrus tribuloides Linn, Sp. Pl. 1050.

On sand dunes at Santurce, Porto Rico (289). Under Coco trees on north shore of Cayman Brac (1162), where it is called, as in the United States, "Sand-bur." Shores of Grand Cayman, north of Georgetown (1249), and southwest point of Perez Island, Alacran Shoal (1756).

Cenchrus viridis, Spr. Syst. 1: 301.

Fields south shore of Culebras Island (619). Sandy fields near Spot Bay, Grand Cayman (1268). East shore of Cozumel Island (1599), and arid plains south of Progreso, Yucatan (1682). A specimen gathered along the roadway near Guanica village (808) is doubtfully placed here.

Stenotaphrum dimidiatum Brong. Dep. Voy. Coc. Bot. 127.

S. Americanum Schrk. On a small juniper-covered islet in Hamilton Bay, Bermuda (15). Waste grounds near the sea at Cape Corientes, Cuba (1459).

Sporobolus Domingensis (Trin.) Kunth. Enum. 1: 214.

Vilfa Domingensis Trin. Arid scrub-land south of Progreso, Yucatan (1713).

Sporobolus Indicus (Linn) R. Br. Prodr. 1: 170.

Agrostis Indica Linn. Roadside banks at Walsingham, Bermuda (88), and near Port Antonio, Jamaica (936).

Sporobolus Virginicus (L.) Kth. Rev. Gr. 1: 67.

Agrostis Virginica Linn. Covering the south end of Perez Island (1750), Pajaros Island, and a small patch on the west end of Allison and Chica Islands, Alacran Shoal.

Chloris barbata (L) Nash. Bull. Torr. Bot. Club. 25: 443.

Andropogon barbatus Linn. *non* C. barbata. Southwest shore of the bay at Charlotte Amalia, St. Thomas (410, 441); south shore of Culebras Island (573, 592); rare in cane fields near Guanica, Porto Rico (735); and on the dry hillside of Morro Castle, Santiago de Cuba (1064).

CHLORIS PETRÆA Sw. Prod. 25.

Eustachys petræa Desv. Dry upper plateau above "The Creek," Cayman Brac (1181); dry shores north of Georgetown, Grand Cayman (1255), and arid, rocky plain south of Progreso, Yucatan (1724).

CHLORIS POLYDACTYLA (L.) Sw. *loc. cit.* 26.

Andropogon polydactylon Linn. Sandy opens south shore of Grand Cayman, near Spot Bay (1271).

CHLORIS RADIATA Sw. *loc. cit.*

Banks of the military road near La Mueda, Porto Rico (215), and roadside banks near Port Antonio, Jamaica (891).

ELEUSINE INDICA (L.) Gærtn. Fruct. 1:8.

Cynosurus Indicus Linn. Roadside banks at Walsingham, Bermuda (84); on irrigated lands only at Guanica, Porto Rico (737); dry scrublands at "The Ovens," Santiago de Cuba (1111), and sandy fields on the south shore of Grand Cayman near Spot Bay (1270).

DACTYLOCTENIUM ÆGYPTIACUM (L.) Willd. Enum. 1029.

Cynosurus Ægyptius Linn. Roadsides near Cataño (256), and common in same situations at Guanica (736), Porto Rico, where it is very prolific. Sandy roadsides near Spot Bay, Grand Cayman (1267).

ERAGROSTIS BAHIENSIS R. & S. Mant. 318.

Sandy shores of the sea north of Georgetown, Grand Cayman (1240).

ERAGROSTIS CILIARIS (L.) Link. Hort. Berol. 1:192.

Poa ciliaris Linn. Railroad embankment near Bayamon, Porto Rico (321); dry sides of Morro Hill, Santiago de Cuba (1062), and dry fields of the plateau above "The Creek," Cayman Brac (1190).

ERAGROSTIS PLUMOSA Link. *loc. cit.*

Damp soil near the Caleta, Island of Cozumel (1528).

CYPERACEÆ.*

CYPERUS ACICULARIS Schrad.

Boggy spot in open field at Caguas, Porto Rico (219). Agrees with Jenman 6051, coast lands of Br. Guiana, det. Clarke.

CYPERUS BRUNNEUS Sw. Fl. Ind. Occ. 1:116.

Ratones Island, Port of Poncé (654); low land at "The Creek," Cayman Brac (1182), and west shores of the Isle of Pines, Cuba (1427).

CYPERUS DENSIFLORUS Mey. Prim. Fl. Esseq. 34.

Borders of the lagoon south of Progreso (1671), and in deep woods at Chichen Itza (1637, 1773), Yucatan.

CYPERUS FILIFORMIS Sw. Prod. Veg. Ind. Occ. 40.

Ditches near Spot Bay, Grand Cayman (1296).

*Determined by Prof. N. L. Britton.

Cyperus lævigatus Linn. Mant. 2:179.

C. mucronatus Rottb. of Griseb. Fl. Br. W. I. 562. Moist banks and ditches at Guanica, Porto Rico (731).

Cyperus ligularis Linn. Amœn. Acad. 5:31.

Boggy spot in open field at Cataño, Porto Rico (156); low, sandy soil at Port Antonio, Jamaica (975, 978), and like situations, at Spot Bay, Grand Cayman (1301).

Cyperus ochraceus Vahl. Enum. 2:325.

In shallow standing water in field at the Caleta, Cozumel Island (1519).

Cyperus Ottonis Bœck. Linnæa 36:350.

Dry field near Playa, Porto Rico (683). Dry, sandy soil south of Charlotte Amalia, St. Thomas (428). Seashores near lagoon, Georgetown, Grand Cayman (1248); in like situation near Progreso, Yucatan (1697), and on the southwest end of Perez Island, Alacran Shoals (1746); not on the other islets of the shoals.

Cyperus rotundus Linn. Sp. Pl. 45.

Roadside ditch at Cataño (332) juvenile; and along railroad at Bayamon (319), Porto Rico.

Cyperus Surinamensis Rottb. Desc. Nov. Pl. 35.

Moist roadside at Santurce, Porto Rico (299).

Cyperus viscosus Ait. Sw. Prod. Veg. Ind. Occ. 20.

Borders of brackish lagoons at "The Creek," Cayman Brac (1171), north shore of Cozumel Island (1596), and at Progreso, Yucatan (1686).

Cyperus sp.

Prox C. viscosus Ait. Ditches along the Bodden Bay road beyond Spot Bay, Grand Cayman (1334). Mr. A. S. Hitchcock reports C. viscosus Ait from Grand Cayman in his Fl. Baham. p. 140; ours is, however, plainly not that species.

Heleocharis capitata (L.) R. Br. Prod. 225.

Scirpus capitatus Linn. Boggy spot in field at Cataño, Porto Rico (175); boggy soil at the Caleta, Cozumel (1526), and borders of brackish lagoon south of Progreso, Yucatan (1687).

Fimbristylis spadicea (Linn.) Vahl. Enum. 2:294.

Scirpus spadiceus Linn. Moist meadow at Cataño (193) and Port of Poncé, Porto Rico (664); also at Charlotte Amalia, St. Thomas (429). Borders of brackish lagoon north shore of Cozumel Island (1594).

Dichromena colorata (Linn.) Hitch. Pl. Baham. 141.

Schœnus coloratus Linn. *D. leucocephala* Michx. *Rhynchospora stellata* Gr. Bog back of Paget's, Bermuda (54, 60).

DICHROMENA NERVOSA Vahl. Enum. 2:241.

D. ciliata Vahl. Moist banks and ditches at Bayamon, Porto Rico (338), and at Port Antonio, Jamaica (927).

DICHROMENA PUBERA Vahl. loc. cit.

Moist meadow at Cataño, Porto Rico (152).

DICHROMENA RADICANS C. & S. Linnæa 6:28.

Boggy soil, center of the island Grand Cayman (1375), and a similar situation on Cozumel Island (1562).

SCLERIA COMMUNIS Kth. Enum. 2:340.

S. pratensis Nees. *Schœnus latifolius* Vahl. Moist place in deep woods, high on mountain back of Charlotte Amalia, St. Thomas (506), where it is called "Cut grass."

PALMACEÆ.

THRINAX ARGENTEA (Jacq.) Lodd. in R. & S. Syst. 8:2.

Palma Jacq. Fine groves of large, straight-trunked trees at Pedernales Point, Isle of Pines, and Cape Corientes, Cuba; also on the northeast point of Cozumel (1601). Low and shrubby on the west shores of Cozumel, and along the beach at Progreso, Yucatan (1718).

COCOS NUCIFERA Linn. Sp. Pl. 1188.

Largely cultivated near Port Antonio, Jamaica, and on Cayman Brac and Grand Cayman, at which points the trees are very prolific. The tree must have been brought to the Yucatan coast by the Spaniards, as the Maya Indians have no name for it.

BROMELIACEÆ.

TILLANDSIA RECURVATA Linn. Sp. Pl. ed. 2:410.

Plentiful on low, leguminous shrubs, especially upon the branches of Pithecolobium unguis-cati, along the shores of Santiago Bay, Cuba (1016).

TILLANDSIA VESTITA Cham. & Schl. in Linnea 6:52.

On trees in forests of the center of Cozumel (1557a.), in fruit only, very plentiful. Whole plant, 30 cm.; fruiting rachis 15 cm.; leaves, 15 x 1.2 cm.

TILLANDSIA POLYSTACHYA Linn. Sp. Pl. ed. 2:410.

On trees Spot Bay, Grand Cayman (1362). Fruiting spike three-branched, 16 cm. long; plant 52 cm. high; lower leaves 28 cm., upper 16-24 cm.; fruits 1.8-2 cm.

TILLANDSIA FLEXUOSA Sw. Prod. Veg. Ind. Occ. 56.

On trees on margins of the lagoon southwest point of Cayman Brac (1219). Plants about 40 cm. high; leaves 4 cm. broad at base, about 14 cm. long; lower internodes 3 cm., their bracts 2.8 cm.; upper internodes 4.8 cm., their bracts 2.2 cm. Stems simple flexuous above the first flowering node; fruits, including pedicel, 2.4 cm., their bracts 1.8 cm.

Tillandsia utriculata Linn. Sp. Pl. 286.

In same situations as the previous species loc cit. (1294). Plants about 60 cm. high, heavily bulbous at the base, 6-10 cm. diameter. Leaves 3 cm. broad at base, 20-30 cm. long; spike compound, branching at each upper internode for one-half its length; branches (16) lower, 8 (upper) cm. long; internodes of lower spike average 3.5 cm., their bracts 2.8 cm. long; fruits profuse at the ends of the branches; bracts and sepals 2 cm. long, fruits 2.8 cm. long.

COMMELINACEÆ.

Commelina nudiflora Linn. Sp. Pl. 4.

C. agraria Kunth., *C. Cayennsis* Rich. Ditches at Walsingham, Bermuda (100); environs of Charlotte Amalia, St. Thomas (439), and rich, moist soils near Port Antonio, Jamaica (1136).

Commelina Virginica Linn. Sp. Pl. ed. 2:61.

C. elegans Kunth. Rich soil south shores Culebras Island (613); suburbs of Charlotte Amalia, St. Thomas (406), and of San Domingo City (845, 877). Boggy soil center of Grand Cayman (1386).

Commelina pallida Willd. Hort. Berol. 2:87.

Moist soils near the Caleta, Cozumel (1530); ditches near Progreso, Yucatan (1679).

Callisia umbellulata Lam. Illus. 1:130.

Creeping in a boggy spot near the Caleta, Cozumel (1520).

Rhœo discolor (L'Her.) Hance Walp. An. 3:659.

Tradescantia discolor L'Her. Waste heaps Georgetown, Grand Cayman (1405); undoubtedly introduced, as it is grown in dooryards near by. Probably brought from Jamaica, where it is also an introduced plant.

AMARYLLIDACEÆ.

Hymenocallis Caribæa (Linn.) Herbert App. 44.

Pancratium Caribæum Linn. Plentiful on the dunes of the coast at Santurce, Porto Rico (295).

Agave Americana Linn. Sp. Pl. 323.

Shores of the Bay of Santiago (1013), the most striking vegetation of the dry season, the flaming orange-yellow spikes rising 5-7 meters, overtopping most of the shrubby covering of the shores.

CANNACEÆ.

Canna edulis Ker-Gawl. Bot. Reg. 9, t. 775.

Open, moist fields at Santurce (261), cane fields at Guanica, Porto Rico, and open woods at Chichen Itza, Yucatan (1636).

ORCHIDACEÆ.

Habenaria monorrhiza (Sw.) Rich. fil. *vide infra*.

Orchis Sw. Grassy fields at Cataño (257), and at Bayamon (309), Porto Rico.

SPIRANTHES ORCHIOIDES (Sw.) Rich. f. Fl. Cub. Fan. 2:252.

Neottia Sw., *S. aphyllus* Lindl. Deep woods near Pisté, Yucatan (1616).

Lælia Domingensis (Lindl. & Paxt.), comb. nov.

Læliopsis Lindl. & Paxt. Flow. Gard. 3:155, *Cattlya* Lindl., *Bletia* G. Rich. Sand dunes and grassy fields near the sea, Cataño and Santurce (277), Porto Rico. Tuber 2-leaved, leaves 18-24 x 4.2 cm., scape nude, whitish, 112 cm. high; flowers, few apical rose colored.

SCHOMBURKIA THOMSONIANA Reichb. f.

On trees in woods near Spot Bay, Grand Cayman ; not in flower nor fruit.

BRASSAVOLA CORDATA Lindl. Bot. Reg. t. 1913.

Dendricolous, in tufts and spiral lines on seaside trees at the Caleta, Island of Cozumel (1797); flowers creamy-white.

CYRTOPODIUM ANDERSONII R. Br. Ait. Hort. Kew, 2:216.

Pedernales Point, Isle of Pines (1426); dendricolous, flowers bright yellow, leaves 36 x 4 cm.

ONCIDIUM CEBOLLETTA (Jacq.) Sw. Vet. Akad. Handl. Stockh. 21: 240.

Epidendrum Jacq. Growing on decayed wood in soil of open forest at Pisté, Yucatan (1617). Leaves terete, 30 cm. long, scape about twice the length of the leaves, flowers small, light yellow, spotted with brown.

DENDROPHYLAX FAWCETTI Rolfe. Gard. Chron. Nov. 1888.

In a Tamarind tree on the Bodden Bay road about a mile east of Spot Bay, Grand Cayman. Like most of the dendricolous orchids observed on the cruise, this species was neither in flower nor fruit.

PIPERACEÆ.

PIPER UMBELLATUM Linn. Sp. Pl. 30.

Rich, wet and shady places near Port Antonio, Jamaica (925). Stems marked with many prominent longitudinal ridges, every fourth ridge more marked and densely pilose; internodes 6-8 cm. long, petioles hairy, 19.5 cm. long, leaves ample, 28.5 x 29 cm. cordate, deltoid at the apex, 11-nerved, umbels 5-rayed, peduncle 2 cm. long, pedicels .5 cm., aments 8 cm. long.

PIPER HIRSUTUM Sw. Fl. Ind. Occ. 1:60.

Rich borders near Port Antonio, Jamaica (892). Branches zig-zag, internodes about 4 cm. rough pilose; leaves ovate-lanceolate, 16.5x8 cm., with a narrow point about 3 cm. of the apex, veins 5-jugal, base very unequal, whole leaf rough-papyraceous, petioles .7 cm., aments straight, 10 cm. long, peduncles about the length of the petioles and opposite them.

PIPER MEDIUM Jacq. Ic. Pl. Rar. 1:2.

Copses about Spot Bay, Grand Cayman (1299). Branches somewhat zig-zag, internodes about 3 cm. glabrous, petioles glabrous .4-.8

cm., leaves chartaceous, glabrous, ovate-lanceolate 8-10x3.5-4.5 cm., point rounded-blunt, principal veins 3, with basal pair of shorter peduncles about 8 cm., aments about 4.5 cm.

Peperomia crassiuscula Sp. nov.

Root-stalk creeping, stems erect rooting at such of the lower nodes as may be in juxtaposition with the soil, glabrous, thick and succulent, columnar, appearing 8-winged when dry, branching vicariously at the lower or upper nodes; leaves whorled in threes, thick, smooth and juicy, nerves not evident either above or below, short petioled, ovate, tapering to the petiole below and to a rounded cuneate point above, 3 x 1.8 cm., shrinking into many irregular keel-like folds when dry, margin sharp-cartilaginous. Aments thick, terminal densely floral about 10 cm. long, peduncle 2.5 cm., rhachis glabrous with about 8 lines of deep pits, bracteoles oblong, peltate, the edges peltate; fruit ovate, pointed above, laterally compressed, 1.2 x .1 mm., or with the persistent apical stigma and peltate style 1.5 mm. long, ventral side channeled below, forming an emarginate base.

Growing from the bark of a fallen and decayed tree near the cenote of Nohoch Chen, at Chichen Itza, Yucatan (1628). When fresh the whole plant is lurid, thick and succulent.

MORACEÆ.

Dorstenia Contrayerva Houstoniana Bureau.

Open woodlands (1623) and the walls of the Cenote Cafetal (1631), Chichen Itza, Yucatan. No. 1623 has narrow sagittate leaves 9 x 4.5 cm., with rounded cordate-auriculate base, and small flowering head 1.5 cm. in diameter; No. 1631 has broad hastate sharply basal-lobed leaves 22x20 cm., flowering heads 3 cm. in diameter.

Ficus longipes Miq. An. Mus. Bot. Lugd 3:298. Plate xxvi.

One of the largest most umbrageous trees of the Yucatec peninsula, plentiful in the deep woods about Chichen Itza (1630), where it is known as the "Alamo" by the Spaniards and as the "Copo" by the Mayas. This 1630 is the species doubtfully referred to as *rubiginosa* in Contrib. 1:14, and illustrated in plate I.

URTICACEÆ.

Urtica urens Linn. Sp. Pl. 984.

Old fields and ditches at Walsingham, Bermuda (112).

Urera elata (Sw.) Griseb. Fl. Br. W. I. 154.

Urtica Sw. *Urera sinuata* Wedd. Hedgerows in the suburbs of San Domingo city (774). Leaves 19x11 cm., widely sinuate.

Adicea grandifolia (Linn.) Kuntze Rev. Gen. 622.

Urtica Linn. *Pilea grandis* Wedd. Borders of rills in moist fields near Port Antonio, Jamaica (913).

Adicea microphylla (Linn.) Kuntze loc. cit.

Pilea microphylla Liebm. *P. muscosa* Lindl. Densely covering

the older Dutch tile roofs at Caguas, Porto Rico (245). Rock crevices near small aguadas, San Miguel Cozumel (1473).

BOEHMERIA RAMIFLORA Jacq. Enum. Pl. Carib. 31.

River bank near San Domingo city (770). Leaves 7-13 x 5.5-10 cm., panicles 11-18 cm.

OLACACEÆ.

SCHŒPFIA DIDYMA Wr. Griseb. Cat. Pl. Cub. 119.

Among the shrubs lining the higher beach dunes at Santurce, Porto Rico (285). In appearance a maytenus-like shrub with vaccinium-like flowers.

POLYGONACEÆ.

POLYGONUM PORTORICENSE Bert. ex Endl. Flor. Suppl. 4: ii, 47.

Border of stream in pasture at Caguas, Porto Rico (241).

ANTIGONON LEPTOPUS Hook. & Arn. Bot. Beechy 308.

Low field at Cataño, Porto Rico (185), showing no indication of having been planted. Probably an escape.

PODOPTERUS MEXICANUS Humb. & Bonpl. Pl. Aeq. 2:89.

Sand dunes at Progreso, Yucatan, in fruit only (1668).

COCCOLOBA UVIFERA (Linn.) Jacq. Amer. Pict. t. 110.

Polygonum uviferum Linn. Sea shores throughout the voyage except on the Alacran shoals, Bermuda south of Paget's, San Juan Bay at Cataño, and Santurce, Porto Rico (178), ripe dried fruit 1.2 cm. diam. Culebras Isl. (1786), leaves large and broad for a shrub, 10 x 15 cm.; St. Thomas at Whitewater Bay, Ratones Isl., Port of Poncé and the shores of Poncé Bay, sandy shores of Guanica Bay, Porto Rico; Sand Point, Mona Island; Port Antonio, Jamaica; bay shores, Santiago de Cuba; south shore of Cayman Brac (1225); Spot Bay, Grand Cayman, and a large tree notable for its height and girth at Georgetown (1406). On the east shore of Cozumel (1590), and the beach at Progreso, Yucatan.

CHENOPODIACEÆ.

CHENOPODIUM AMBROSIOIDES Linn. Sp. Pl. 219.

Waste places about Pagets, Bermuda (62). Waste ground and road sides south of Charlotte Amalia, St. Thomas (512). The species appears to be introduced in both localities.

CHENOPODIUM MURALE Linn. Sp. Pl. 219.

Roadsides, where it is always found to be browsed upon by cattle, Guanica, Porto Rico (744).

ATRIPLEX CRISTATA Humb. & Bonpl. ex. Willd. Sp. Pl. 4:959.

Leaves irregularly slightly and unevenly denticulate, or often entire, plainly mucronate, pale green above, silvery beneath, disk bi- or tri-cristate. Shore of lagoon south of Progreso, Yucatan (1721).

A few individuals in a group center of south end of Perez Island (1754), another small patch on Pajaros Island, and a quite large cluster on Chica Island, Alacran Shoals.

Salicornia fruticosa Linn. Sp. Pl. ed. ii:5.

Shore of islet in Hamilton Bay, Bermuda (17). Probably a variety of this species, but not in shape to characterize.

Dondia linearis (Ell.) comb. nov.

Salsola linearis Ell. Carol. 1:332. *Suæda linearis* Moq. *Chenopodina linearis* Moq. Borders of lagoon south of Progreso, Yucatan (1708); decumbent and spreading stems 20-30 cm., branchlets densely leafy. Shores of the bay at Guanica, Porto Rico (766).

AMARANTHACEÆ.*

Kokera paniculata (Linn.) Kuntze Rev. Gen. 542.

Celosia paniculata Linn. Sp. Pl. ed. 2:1762. *non* Linn. Sp. Pl. ed. 1:1753.

Achyranthes altissima Jacq. Enum. Pl. Carib. 17.

Chamissoa altissima H. B. K. Nov. Gen. et Sp. 197.

Suburbs of San Domingo City (851), and of Port Antonio, Jamaica (919).

Celosia paniculata Linn. Sp. Pl. 206.

Climbing among shrubs in hedgerows near Guanica, Porto Rico (686).

Whole plant, including sepals and urticle, turns black in drying. Flowers 5 mm. long, the sepals scarcely exceeding the urticle; leaves deltoid, lanceolate. Easily distinguished from C. virgata—the only other species likely to be found in the same region—by the shape of the leaves, and the larger flowers and utricle.

Amaranthus hybridus Linn. Sp. Pl. 990.

A. hypochondriacus Linn. *loc. cit.* 991.

A. chlorostachys Willd. Hist. Am. 34.

A. chlorostachys hybridus Wats. Gray Man. ed. vi:428.

Frequent along the margin of open woods at Walsingham, Bermuda (104, 110).

Reade does not mention this species in his Pl. Bermuda, nor does Kemp in his Winter Fl. Bermuda; Lefroy in his Bot. Bermuda cites it as an American species *sine loc.*

This species is distinguished from A. tristis, its nearest relative in the West Indies, by its much longer sharply aristate bracts, and mucronate but not emarginate leaves. Very variable.

Amaranthus polygonoides Linn. Pl. Jam. Pugill 2:27.

An erect, slender, pale green, branching, weed-like herb about 30 cm. high, plentiful about Morro Hill, Santiago de Cuba (1068).

Amaranthus spinosus Linn. Sp. Pl. 991.

The only thorny amaranth.

Frequent in waste places Cataño, Porto Rico (188); outskirts

*Edwin B. Uline, auct.

of Charlotte Amalia, St. Thomas (416), spines plentiful and well developed. An old garden spot at Pedernales Point, Isle of Pines (1425), spines few and poorly developed. Waste grounds about San Miguel, Cozumel (1468), spines plentiful; and outskirts of Progreso, Yucatan (1736), spines short and very sharp.

AMARANTHUS TRISTIS Linn. ex. Griseb. Fl. Br. W. I. 69.

Willd. Hist. Amar. t. 5, f. 10. A. tristis Linn.?

Waste grounds suburbs of San Domingo city (860), leaves small 3–4.5 x 1.5–2 cm. Roadsides near Port Antonio, Jamaica (1794), juvenile. Fallow and cultivated fields at "The Creek," Cayman Brac (1191), where it is known as "Callalu;" leaves large 6.5–8 x 4–4.5 cm., petioles as long as the lamina; another specimen from coco groves (1155) with more diffuse inflorescence and smaller (2.5–4 cm.) leaves on short petioles also occurs here. Old fields in the center of Grand Cayman (1390), leaves 5–6x3–4 cm. In all the above specimens the inflorescence is slender, in the following, however, it is thick and dense. Morro Hill (1058) and San Juan Hill (1044), Santiago de Cuba.

Inasmuch as A. tristis Linn. has been referred to A. Gangeticus an Asiatic plant it is very doubtful whether this species, occurring as abundantly as it does in the West Indies, is not an entirely different plant from that of Linnæus. It is easily recognized by its short bracts a little longer than the flower; otherwise very near A. hybridus.

AMARANTHUS VIRIDIS Linn. Sp. Pl. 1005.

Old fields south shore Culebras Island (587). San Juan Hill, Santiago de Cuba (1045), depauperate; and along the Bodden Bay road, Grand Cayman (1347).

Distinguishable by its three narrow short sepals and conspicuously rugose indehiscent utricle.

CYATHULA PROSTRATA (Linn.) Blume Bijdr. 1825–6 :549.

Achyranthes Linn. Sp. Pl. 296. Dry sandy places near Port Antonio, Jamaica (918, 969).

Seems to differ from the Brazilian C. achyranthoides chiefly in its longer, looser inflorescence.

ACHYRANTHES ASPERA OBTUSIFOLIA (Lam.) Griseb. Fl. Br. W. I. 62.

A. obtusifolia Lam. Dict. 1: 545. *A. aspera* Moq. de C. Prodr. 13:314. Dry fields about Santiago de Cuba especially at El Caney (1050) and San Juan Hill (1080). Waste grounds near San Domingo city (790). South shore of Culebras Island (570, 633). Hillsides back of Charlotte Amalia, St. Thomas (443, 514); and fields near Spot Bay, Grand Cayman (1272).

This form appears to be the most abundant one of the species. It is characterized by its obovate very obtuse leaves, in contradistinction to the *var.* argentea Griseb., in which the leaves are long-acuminate; its flowers are not so long and sharp as those of *var.* argentea, while its bracts are more or less roseate-tinged.

Achyranthes aspera simplex Millsp. var. nov.

A form closely related to var. obtusifolia but of smaller, strictly

erect, unbranched growth 20–25 cm. high, very downy, pubescent, and simple terminal spikes only 7.5–12.5 cm. long.

Prevalent in old fields on the hillsides south of Charlotte Amalia, St. Thomas (484). Type in Herb. Field Col. Mus. cat. No. 60484.

ALTERNANTHERA Forsk.

In determining the limits of this genus I prefer to accept the interpretation of Grisebach, Bentham, Otto Kuntze and others who made it to include *Mogiphanes* Mart. and *Telanthera* R. Br. *excl.* Lithophila Sw., that is, all species of the Capitato-spicate *Gomphroneæ* with undivided stigma, and stamens which alternate with sterile filaments upon a more or less cup-shaped tube.

Alternanthera Braziliana (Linn.) Kuntze Rev. Gen. 537.

Gomphrena Braziliana Linn. Am. Acad. 4: 310.
Mogiphanes Braziliensis Mart. Nov. Gen. et Sp. 2: 34.
Philoxerus Braziliana Sm. Rees. Cycl. 27: 4.
Mogiphanes straminea Mart. Nov. Gen. et Sp. 2: 35.
Celosia altissima Salzm. ex. Moq. de C. Prod. 13: 381.
Telanthera Floridana Chapm. Fl. So. U. S. 383.
Alternanthera straminea Millsp. Field Col. Mus. Bot. 1: 16.

Climbing to a height of 6-12 feet supported by dense shrubbery, on all parts of Cozumel Island (1710).

The wide range of this species includes southern Florida, the West Indies, coastal Mexico, Central and South America. Care should be observed to distinguish it from A. Costaricensis Kuntze, which is described as being more or less fasciculately pilose, the anthers globose instead of oblong, and having staminodia laterally instead of apically pectinate.

Alternanthera Culebrasensis Uline, Field Col. Mus. Bot. 1: 420.

Prostrata caulibus gracilibus, radicantibus, præcipue superne pube densa appressa vestitis; foliis rotundatis breviter pedicellatis, supra (nisi junioribus) glaberrimis, subtus densius pilosis, pilis caulium foliorumque verticillatim ramulosis, capitulis ovatis, densifloris sessilibus, solitariis vel binis; sepalis dorso pilosis, pilis setigeris, exterioribus trinerviis, interioribus plicato-carinatis, omnibus brevissime aristatis quam bracteis 2-plo longioribus; staminodiis filamenta fertilia æquantibus, usque 5-laciniatis, filamentis in ½ altitudine coalescentibus.

Caules vix 1 mm. diametro, internodiis 3–6 cm. longis. *Folia* 1.5–2.5 cm. longa lataque, basi sæpe inæquilatera, membranacea, in sicco læte virida, in axillis cristas lanosas gerentia. *Capitula* 4–6 mm. longa. *Flores* 3 mm. longi, 2 mm. lati. *Antherarum thecæ* linearilanceolatæ.

Culebras Island, south shores, (607). Type in Field Col. Mus. Herb. Cat. no. 60607.

Nearer *A.* (*Telanthera*) *Sintenisii* Urban *l. c.* than the preceding, but the pubescence on the leaf of the latter is described as "supra laxius subtus densius pilosis," upon which rests the chief difference in the above species. It may prove to be only a variety—a question which only a comparison of the two plants can decide.

[ALTERNANTHERA SPINOSA Roem. & Schult.

Specimen 268 of Combs, Santa Clara district of Cienfuegos.

Although no details of pubescence characters are given in the descriptions of this species, it is safe to conclude that the verticillate branching of the hairs clothing the stem and under surfaces of the leaves has been overlooked. The heads are more strikingly spiniferous than the other West Indian species of Alternauthera.]

ALTERNANTHERA PARONYCHIOIDES St. Hil. Voy. Brés ii, 2: 43.

Dry roadsides near Guanica, Porto Rico (725, 748).

Not readily differentiated by its dense prostrate habit alone from A. repens, but widely removed in its flower characters. Stamens much longer than the short, wide, more or less dentate staminodia.

LITHOPHILA Sw. Prod. Viq. Ind. Occ. 14 (1788).

Lithophila muscoides Sw. *Philoxerus* R. Br. Prod. 416 (1810).

The genus Lithophila seems so clearly defined in habit and floral structure as to deserve recognition apart both from Iresine and Alternanthera. Iresine it is true may sometimes have a capitate inflorescence, but its flowers are never compressed as in Philoxerus; in cases of capitate inflorescence in Iresine the heads are never enveloped or subtended by leafy bracts as in Philoxerus and Lithophila; while the staminal cup of Iresine has always either the rudiment of a staminodium or a rounded or pointed elevation of the margin of the cup where the staminodium would otherwise arise. In Philoxerus as well as in Lithophila, which differs from Philoxerus essentially in having 2 to 3 stamens, the sinuses of the cup between filaments and filament-rudiments are so shaped as to preclude the theory of staminodia at any period of the history of their development. Bentham & Hooker's Genera Plantarum describes the cup of Lithophila as simple or dentate between the filaments. Such dentations will probably be found to be rudiments of the deficient 4th and 5th stamens corresponding to the full number 5. For the proper interpretation of staminodia, it must be remembered that the rudimentary filaments arising on the cupule in the position of the deficient stamens in *Lithophila* are essentially different in their significance from the teeth or staminodia of Iresine and Alternanthera, which are alternate with the filaments and with the calyx segments, never opposite as in Lithophila. Dr. Kuntze in a discussion of the relationships of the group in his Revisio Plantarum ascribes staminodia also to Philoxerus; in a large number of specimens of *Lithophila vermiculata* (L) Uline examined, I have not found the slightest indications of them. Grisebach, Flora West Indies, also recognizes this entire absence of alternating staminodia both in Philoxerus and Lithophila as an essential generic character, but he goes a little further and keeps the two apart on the basis of the differing number of stamens. This variability in number of stamens occurs elsewhere in the Amaranthaceæ, and certainly can not be justifiable as a genuine character. From a phylogenetic point of view the creeping or prostrate species of the group seem to be plainly depauperate forms adapting themselves to conditions offering meager nourishment, e. g., sea-shore, sandy or rocky places, etc. The result

is seen in (1) the great reduction in size of the plant and all its parts accompanied by the dense prostrate habit, (2) the disappearance of two or three stamens indicated by the sterile filaments which are found standing in the position of the fertile stamens with reference to the perianth segments.

In the light of the above considerations the following revision of Kuntze's arrangement of the Gomphreneæ is suggested, to the extent that it is affected by the changes here presented:

A. Genera characterized by solitary or fasciculate flowers, *Guillemenia*, *Cladothrix*.

B. Flowers capitate or spicate.

a. Perianth segments+coalescent, *Froelichia*.

b. Perianth segments free.

α. Stigma capitate, *Pfaffia*, *Gossypianthus*, *Alternanthera*.

β. Style (1 or 2) bifid.

Fls. 4-merous, stamen 1, *Woehleria*.

Fls. 5-merous, stamens 2–5.

Lvs. Alternate, *Dicraurus*.

Lvs. Opposite.

Stamineal tube 10-fid, i. e., 5 fertile stamens with staminodia alternating, these sometimes much reduced, *Iresine*.

Stamineal tube 5-fid, lacineæ all antheriferous or a part abortive.

Lacineæ trifid, fimbriate or denticulate *Gomphrena*.

Laciniæ simple, *Lithophila*.

The genus falls into two sections as follows:

Sect. *Philoxerus*. Plant erect and robust; stamens 5.

Sect. *Eulithophila*. Plant depauperate, stamens 2 or 3.

Lithophila vermiculata (Linn.) Uline Comb. nov.

Gomphrena vermicularis Linn. Sp. Pl. 224.

Sandy bare spots in fields at Santurce (270) and Cataño (327), Porto Rico. Dry creek bed near Charlotte Amalia, St. Thomas (452), where it is known as the "Bay-flower." Ratones Island (650). Shores of the bay of Santiago de Cuba (1018). South shore of Cayman Brac (1220), and shores of the lagoon near Progreso, Yucatan (1712). On a small bare sandy spot on Perez Island of the Alacran Shoals (1741), not on the other islands of the group.

Iresine lanceolata Moq. in de C. Prod. 13: 347.

Among the bushes above the beach at Cape Corientes, Cuba (1458 ♂), and in the arid stony scrubland south of Progreso, Yucatan (1659 ♀).

The Yucatan ♀ specimen differs from that of Cuba ♂ only in having its leaves more crowded and red-margined and somewhat narrower and smaller; they are without doubt very closely related, and are both probably only varieties of the variable Iresine paniculata.

Iresine paniculata (Linn.) Kuntze Rev. Gen. 542.

Celosia paniculata Linn. Sp. Pl. 206.

Iresine celosioides Linn. Sp. Pl. ed. 2: 1456.

Infrequent near Port Antonio, Jamaica (919 ♀). Ascending profusely among bushes at The Ovens, Santiago de Cuba (1122 ♂). Scrub above the beach at Pedernales Point, Isle of Pines (1420 ♂). Abundant and with large densely flowered panicles near San Miguel, Cozumel (1498 ♂), and in the center of the island (1574 ♀).

These specimens display two groups of forms, one probably representing the type with its leaves acuminate at both ends, and plant glabrous throughout; the other with the older leaves subcordate at the base, more or less pubescent, and with stems manifestly puberulent (919, 1122, 1420).

NYCTAGINACEÆ.*

MIRABILIS JALAPA Linn. Sp. Pl. 177.

Waste grounds near dwellings, from the gardens of which it is doubtless an escape, Cataño, Porto Rico (161, 164, 184), and Georgetown, Grand Cayman (1402), where it is called "Four o'clock." Flowers white, pink, bright rose or yellow.

BOERHAAVIA ERECTA Linn. Sp. Pl. 3.

Frequent along the road ascending Morro Hill, Santiago de Cuba, *Typica–W.* (1089), and on open grounds about Spot Bay, Grand Cayman, *Typica–W.* (1277).

BOERHAAVIA REPENS Linn. Sp. Pl. 3.

B. hirsuta Willd. *non* Linn., *B. Caribæa* Jacq., *a prima indumento minus denso, ab alterna pilis glanduliferis frequent diversa. Eadem planta provenit in Texas, Florida* (*leg. Nash.*), *Chile. B. viscosa et B. hirsuta arctissime sunt connexæ, et volum formæ unius typi, qui in indumento eximie varias!–W.* Common about Guanica, Porto Rico (740), and on hills back of Charlotte Amalia, St. Thomas, *verisimile B. hirsuta Lag., Willd.–W.* (467, 492). Opens about San Juan Hill and Morro Hill, Santiago de Cuba (1042, 1069, *verisim. B. viscosa Lag., Rodr.–W.*). Scrub lands south of the lagoon, Progreso, Yucatan. A few plants just inland from the clumps of Tournefortia gnaphalodes on the western shore of Perez Island, Alacran Shoals (1743). *Nihil aliud quam forma transitoria inter B. viscosam Lag. Rodr. et B. hirsutam Lag., Willd.* The species does not exist on the other islands.

BOERHAAVIA PANICULATA L. C. Rich.

South shore Culebras Island (642). Open sandy spots near the sea at Cataño, Porto Rico (167). Roadsides and coco groves near The Creek, Cayman Brac (1189); and in an old garden spot at Pedernales Point, Isle of Pines (1134), *omnes supra typica–W.*

BOERHAAVIA SCANDENS Linn. Sp. Pl. 3.

Infrequent and in fruit only at Guanica, Porto Rico (760), and on Morro Hill, Santiago de Cuba (1094). The peculiar claveate, glandular-tipped umbellate fruits, mark this species.

*Italicized notes are appended by Prof. Dr. A. Heimerl, Wien.

PHYTOLACCACEÆ.

Rivina humilis Linn. Sp. Pl. 121.

Suburbs of Charlotte Amalia (515) and of San Domingo city (833). In the former the racemes are prolonged and few flowered at the apex, in the latter the fruiting is full and perfect, racemes 6–8 cm. long. South shores of Culebras Island (612, 630), and at Guanica (714), Porto Rico.

Rivina humilis lævis (Linn.) comb. nov.

R. lævis Linn. Mant. 1: 41. Two forms of this variety were prevalent along the route travelled, the one with small yellowish green ovate-lanceolate mucronulate leaves 4–6x2–3.2 cm., and short racemes 3–4.5 cm. of this specimens were taken as follows: Environs of San Domingo city (800). Moist soils and on stone fences near Port Antonio, Jamaica (923, in this the leaves are especially narrower lanceolate). Southwest Point, Cayman Brac (1210). Bodden Bay road, Grand Cayman (1343, 1352). Cape Corientes, Cuba (1448, 1455), and the east shore of Cozumel (1610). The other form has broadly ovate-lanceolate pointed and mucronulate deep-green leaves 7–9 x 3.5–5 cm., oblique at the base and prominently veined, the racemes are longer 4.5–6 cm. and the fruits larger. Specimens from Morro Hill, Santiago de Cuba (1081). The Creek, Cayman Brac (1156), where it is known as "Fowl-berry," and Bodden Bay road, Grand Cayman (1348).

Petiveria alliacea Linn. Sp. Pl. 342.

Base of Morro Hill, Santiago de Cuba (1086), and center of the island of Cozumel (1541), where it is called Pay-ché or "Fox-tree," on account of its odor; spikes 20–24 cm. long. Old field at Caguas, Porto Rico (204).

Phytolacca Nova-Hispania nom. nov.

P. Mexicana Sweet Hort. Brit. ed. 1: 337 *non* Crantz *nec.* Gaertn. Edges of an old cultivated field at Pedernales Point, Isle of Pines (1413). Leaves 11–13 x 5.5–6.5 cm., fruiting racemes 18 cm. long, fruits .8 cm. diameter.

AIZOACEÆ.

Mollugo Cerviana Ser. de C. Prod. 1: 253.

Coco groves near the sea at Santurce, Porto Rico (269). One small and scrappy specimen only.

Sesuvium Portulacastrum (L.) Linn. Syst. ed. 10: 1058.

Portulaca Linn. Syst. Plentiful and very succulent at the margins of the lagoon Walsingham, Bermuda (98). Plentiful on Ratones Island, Porto Rico (651). Sandy beach along the south shore of Cayman Brac (1221); shores of lagoon north end of Cozumel, and the lagoon south of Progreso. The greatest mass of this species I have ever seen clothes the surface of Perez, Chica, Pajaros and Allison Islands, Alacran Shoals (1749, 1768).

PORTULACACEÆ.

PORTULACA PILOSA Linn. Sp. Pl. 445.

Widely spreading on waste ground about the suburbs of San Domingo (875). Very depauperate plants from the woodlands of the center of Cozumel (1571).

PORTULACA OLERACEA Linn. Sp. Pl. 445.

The common form of the species was collected from roadsides about Charlotte Amalia, St. Thomas (447), San Domingo (874) and in an old garden near the center of Cozumel (1581). A few individuals of the species are scattered among the sesuvium on Perez Island (1740, 1760); and several on Chico Island, Alacran Shoals; the other islands do not furnish a single plant of the species as yet.

RANUNCULACEÆ.

CLEMATIS DIOICA Linn Syst. ed x. 1084.

C. Americana Mill. Open woodlands north of San Miguel, Cozumel (1505), in full fruit. In November its profusion of white flowers causes the shrubs over which it climbs to appear as if drifted over with snow.

MENISPERMACEÆ.

CISSAMPELOS PAREIRA Linn. Sp. Pl. 1031.

Thickets near The Ovens, Santiago de Cuba (1120, 1121). Whole plant pubescent, leaves ovate-orbicular 5 x 5 cm. peltate, truncate at the base; mid rib prolonged into an aristate tip.

LAURACEÆ.

PERSEA PERSEA (Linn.) Cock. Bull. Torr. Club 19: 95.

Laurus Persea Linn. *Persea Americana* Mill. *P. gratissima* Gaertn. Scattered about the opens and woodlands of Grand Cayman where it is called "Pear," Bodden Bay road (1317).

CASSYTHA FILIFORMIS Linn. Sp. Pl. 35.

Trailing over dunes at Santurce (283) and port of Ponce, Porto Rico. Trailing over the beach sand dunes at the Creek, Cayman Brac (1168).

PAPAVERACEÆ.

ARGEMONE MEXICANA OCHROLEUCA Lindl.; Bot. Reg. t. 1343.

An introduced weed in waste grounds in each of the following localities, in none of which can it be considered native: Pagets and Walsingham, Bermuda (64, 107); near dwellings at Guanica, Porto Rico (709); Charlotte Amalia, St. Thomas (383) where it is called "thistle"; particularly large and fine specimens near San Domingo City (775); Morro Hill, Santiago de Cuba (1092); ruins of Fort George, Georgetown, Grand Cayman (1400); San Miguel, Cozumel (1497).

Fumaria densiflora de C. Cat. h. Monsp. 113.

Old and fallow cultivated fields common, at Walsingham (92) and Hamilton (116) Bermuda. Leaf segments mucronate tipped.

CRUCIFERACEÆ.

Lepidium apetalum Willd. Sp. Pl. 3: 439.

Fallow fields near Hamilton, Bermuda (138); and Caguas, Porto Rico (202, 221); dry stream bed near Charlotte Amalia, St. Thomas (510), a luxurious growth; hillside near the fort at El Caney, Santiago de Cuba (1028), depauperate; old garden near San Miguel, Cozumel (1567), typical growth; and roadside ditch in Progreso, Yucatan (1749); not appearing native in any of the above localities.

Cakile maritima Scop. Fl. Carn. ed. 2, 2:35.

Even with the careful and discriminating characters in Prof. Robinson's Cakile in Syn. Flora. N. A. 2, 1:132, I cannot separate the specimens gathered into species according to the leaf or fruit forms credited to each, as they constantly intermix, the leaves of *Americana* and fruits of *maritima* appearing on one plant, while the reverse may and does occur, I therefore am compelled to place all individuals gathered, under the older species. The plant seems to require the clear clean sea air and spray, as it is not to be found on the shores of large bays, though across the spits dividing such bays from the sea it is found in profusion. Seashore sands at Santurce (272), Culebras Island (626), Ratones Island, and Port of Ponce (676), Porto Rico. Coral-rock shore line at The Creek, Cayman Brac (1159), where it is known as "Bay-bush." Leaves entire, lanceolate, rachis somewhat geniculate, fruits cylindrical-fusiform, upper cell the longer, pointed, barely angular; plants depauperate from the character of the location. Another specimen (1179) from the sandy beach beyond the rocks, has the leaves all entire, but varying from narrowly lanceolate to ovate, fruits not developed. Still another (1179*a*) plant from the identical locality, in fact one of a clump of which the previous specimen formed a part, has ovate-spatulate leaves, the lower simply sinuate toothed, the upper deeply and irregularly sinuate-cleft, fruits undeveloped. Specimens from the sandy shores of Spot Bay, Grand Cayman (1308), have narrowly lanceolate, sinuate-dentate leaves, the fruits have the upper cell elongated acute and 5-7 ribbed. The sandy beach at Cape Corientes yields a form (1465) with sinuately divided leaves throughout, the fruits comparing perfectly with those of the last mentioned 1308. The western shore of Perez Island yields a form (1744) with lanceolate and ovate-spatulate entire leaves, and fruits with a large tumid upper cell, sharply apiculate, and furrowed rather than angled. Pajaros Island, adjacent, yields a form (1764, 1767) with thick leaves of the form of the last, and fruits the apical cell of which is almost globose-apiculate, while the lower cell is little other than an obconical peduncle. While the plants from both Perez and Pajaros Islands are large fruit producers they have a sickly yellow appearance compared with the fresh, cool green of those of Chico and

Allison Islands of the shoal. These plants have leaves varying from exact counterparts of the last to sinuate-dentate, and sinuate-cleft forms, while the fruits of both the last forms appear indifferently upon these.

[Specimens of this species gathered on the shores of Lake Michigan, near Chicago, are fully as variable as these from the West Indies; clumps in various localities yielding forms that might be placed under either this or *Americana* as described, and others that intermix both. (Herb. Field Col. Mus., Lansing, Nos. 10, 11, 330, 417, 449.)]

BRASSICA SINAPISTRUM Boiss. Voy. Esp. 2: 39.

Old fallow fields near Hamilton, Bermuda (132).

RAPHANUS RAPHANISTRUM Linn. Sp. Pl. 753.

Plentiful on banks and in fields and open woods at Walsingham, Bermuda (75, 78).

CAPPARIDACEÆ.

POLANISIA ICOSANDRA (Linn) W. & Arn. Prod. Pl. Ind. 22.

Cleome viscosa Linn. Waste grounds about Charlotte Amalia, St. Thomas, (367, 450); large growth, pods 8-9 cm., leaves 3-5 foliolate, folioles 3.5-5.5 x 1.5 x 3 cm.

CLEOME PUNGENS Willd. Enum. Hort. Berol. 689.

Waste places near Charlotte Amalia, St. Thomas (451); and about Santo Domingo (784). This form appears to be clearly distinct from the next species. In PUNGENS the plants are somewhat hairy or rather pilose, the leaflets are fusiform and glabrous, the ovary glabrous, and the bracts of the rachis larger. Leaflets 5-7, 4-6 x 2-2.5 cm., bluntish, bracts 1 x .8 cm., spines none.

CLEOME SPINOSA Linn. Sp. Pl. 2: 939.

Near Port Antonio, Jamaica (964), and at El Caney, Santiago de Cuba (1040). Whole plant pubescent, including the ovary, leaves 5-foliolate, leaflets lanceolate-acuminate 6-8x2 cm., axils furnished with two yellow recurved prickles, bracts .8 x .6 cm.

CAPPARIS CYNOCEPHALLOPHORA Linn. Sp. Pl. ed. 2: 721.

Low shrub on maritime hillsides south shores Culebras Island (575). Leaves narrowly lanceolate, pointed or rounded at the apex 6.5-7.5 x 1.5 cm.

MORISONIA AMERICANA Linn. Sp. Pl. 503.

Small spreading tree about 3 meters high, with ovate-lanceolate leathery leaves 12-14.5 x 3-5.5 cm.; stamens in these specimens 12. South shore Culebras Island (583).

MORINGACEÆ.

MORINGA PTERYGOSPERMA Gaertn. Fruct. 2: 314.

Cataño, Porto Rico (182), probably cultivated. The Ovens, Santiago de Cuba (1116), distant from cultivated lands or dwellings.

CRASSULACEÆ.

Bryophyllum pinnatum (Lam.) S. Kurtz Jour. Soc. Beng. xl, 2: 52.

Naturalized on stone walls at Pagets, Bermuda (36); waste rocky banks at Charlotte Amalia, St. Thomas (455), where it is known as "wonderful-leaf"; waste grounds common San Domingo (819); common on rocky grounds at Spot Bay, Grand Cayman (1311); plentiful about San Miguel, Cozumel (1508), and Chichen Itza, Yucatan.

ROSACEÆ.

Chrysobalanus Icaco Linn. Sp. Pl. 513.

Dunes along the sea at Santurce, Porto Rico (284). Leaves mostly emarginate, 5.3 x 4.3 cm.

LEGUMINOSACEÆ.

Pithecolobium Unguis-cati (Linn.) Benth. in Hook. Lond. Jour. Bot. 3: 200.

On rocky hillside south shore of Culebras Island (623, 631); near the sea at Port Ponce (673, 677) and Guanica (705), Porto Rico. Coast rocks at Charlotte Amalia, St. Thomas (445), where it is known as "Crab-pickle," and at the north end of Cozumel Island (1592).

Pithecolobium oblongum Benth. loc. cit. 3: 198.

Edges of the woodland east of San Miguel, Cozumel (1482).

Albizzia Lebbek (Willd.) Benth. loc. cit. 3: 87.

Acacia Willd. Escaped to pasture land at Cataño, Porto Rico (172, tree 12 meters high). Also noted in pasture south of Charlotte Amalia, St. Thomas, where it is known as the "Thibet Tree."

Acacia Farnesiana (Linn.) Willd. Sp. Pl. 4:1083.

Mimosa Linn. Environs of Charlotte Amalia, St. Thomas (480), where it is known as "Cashá." Sea shores Port of Poncé (674) and Guanica (768), Porto Rico; also at Santiago de Cuba on the shores of the bay (1014). A form with long spines (3 cm.) and much longer more cylindrical pods (9 cm.) found in a mountain pasture above Charlotte Amalia (444).

Leucæna glauca (Linn.) Benth. loc. cit. 4: 416.

Mimosa Linn. Environs of Charlotte Amalia, St. Thomas (432), where it is known as "Wild Tamarind"; and at Georgetown, Grand Cayman (1392), where, for some unknown reason it is called "Chamomile."

Mimosa Ceratonia Linn. Sp. Pl. 523.

High on the hills back of Charlotte Amalia, St. Thomas (524), where it is known as "Black Amaret."

Mimosa pudica Linn. Sp. Pl. 518.

Dry fields and pastures at Cataño, Porto Rico (155); Charlotte Amalia, St. Thomas (412), where it is called "Gritchee"; suburbs of San Domingo city (867); at Port Antonio, Jamaica (987), and clear-

ings center of Cozumel (1540), where it is called X-muɔ, "Fold-together," referring to the sensative leaves. In bloom and full fruit throughout.

DESMANTHUS DEPRESSUS Humb. & Bonpl. Willd. Sp. Pl. 4: 1046.
Pasture lands above Charlotte Amalia, St. Thomas (415); and south coast of Culebras Island (574).

TAMARINDUS INDICA Linn. Sp. Pl. 34.
A large tree in full fruit on the east shore of the bay at Guanica, Porto Rico (742), also in cultivation at Charlotte Amalia, St. Thomas, Georgetown, Grand Cayman, and at Spot Bay.

BAUHINIA DIVARICATA Linn. Sp. Pl. 374.
B. porrecta Sw., *Casparea* Griseb. Sparingly in flower at "The Creek" (1160) and southwest point (1207, 1208) Cayman Brac, where, in reference to the shape of the leaf, it is called "Bull-hoof", and at Spot Bay, Grand Cayman (1289).

CASSIA* BACILLARIS Linn. f. Suppl. 231.
Half way up the mountain road back of Charlotte Amalia, St. Thomas (541), where it is known as "Stiver bush".

CASSIA BICAPSULARIS Linn. Sp. Pl. 376.
Old field back of Charlotte Amalia, St. Thomas (503), where it is called "Styver-bush"; south coast of Culebras Island (598); and roadside environs of San Domingo city (802)?

CASSIA BIFLORA Linn. Sp. Pl. 378.
Arid rock-strewn plains south of the lagoon at Progreso, Yucatan (1658, 1670).

CASSIA LIGUSTRINA Linn. Sp. Pl. 378.
Dry roadside bank near Port Antonio, Jamaica (995).

CASSIA OCCIDENTALIS Linn. Sp. Pl. 377.
Moist soil along the road from Santurce to the sea, Porto Rico (301); waste heap on the bay shore (364) and high up in the mountain woods Charlotte Amalia (527), St. Thomas, where it is known as "Stinking-wood." Southern coast of Culebras Island (568); environs of San Domingo City (804); and coast of Grand Cayman near Georgetown (393).

CASSIA POLYPHYLLA Jacq. Coll. 4: 104.
Roadsides, environs of San Domingo City (820, 826). A small tree 3 meters high.

CASSIA RACEMOSA Mill. Gard. Dict. ed. 8: 19.
West coast of Cozumel north of San Miguel (1481) and at the Caleta (1509) where it is called "Yaax-haaben" by the Mayas, meaning "evergreen."

*The genus by Mr. Charles L. Pollard.

Cassia Sophera Linn. Sp. Pl. 379. (Ex. char).
Roadside near San Domingo City (872), and on the slopes of Morro Hill, Santiago de Cuba (1090).

Cassia Tora Linn. Sp. Pl. 376.
Banks of a dry brook near Caguas, Porto Rico (236).

Cassia. sp.
Near C. bicapsularis but too juvenile. Port Antonio, Jamaica (1135).

Cassia. sp.
Juvenile and lacking determinative characters. Environs of San Domingo City (783).

Chamæcrista* aspera (Muhl.) Greene *infra cit.*
Cassia aspera Muhl. In sand of roadside near Spot Bay, Grand Cayman (1305).

Chamæcrista diphylla (L.) Greene Pitton. 4: 28.
In a coco grove near the sea at Santurce, Porto Rico (291).

Chamæcrista complexa Pollard, n. sp.
Plant shrubby with erect or spreading branches, the stems finely strigose-pubescent; leaves glabrous, 4-13-foliolate, green above, much paler beneath, 2.2-2.7 cm. long; stipules herbaceous, lanceolate, conspicuously striate; leaflets elliptical or occasionally obovate, obtuse, tipped with a prominent cusp, the midvein somewhat eccentric, 5.5-7 mm. long; petiolar gland discoid, stipitate; flower large, .8-2 cm. in diameter; sepals membranaceous, very unequal; petals obovate, exceeding the sepals; legume nearly straight, linear, compressed, the surface of its valves glabrous or with a few scattered hairs.
Collected on roadsides at Charlotte Amalia, St. Thomas, January 17-18 (375). Type in the herbarium of the Field Columbian Museum, Cat. No. 60,375. Nos. 469 and 498, collected high on the mountain at the same place, are also to be referred here.
The plant is a very distinct member of the large-flowered section of Chamæcrista, yet suggesting the nictitans group in its foliage and in the slender stipitate petiolar gland.

Chamæcrista glandulosa (L.) Greene, Pitton. 4: 28.
Cassia glandulosa Linn. Sp. Pl. 572 (1753). Under coco trees in an orchard near the sea at Santurce, Porto Rico (268, 286).

Chamæcrista grammica (Spreng.) Pollard, comb. nov.
Cassia grammica Spreng. Neue. Entd. 3:55 (1822). Dry sandy field near Playa, Porto Rico (682).

Chamæcrista Millspaughii Pollard, n. sp.
Stems branching, erect, shrubby, at least at the base, finely strigose-subescent; leaves pubescent or becoming glabrate with age, 2.5-4 cm. long, 5-15-foliolate, the rachis sparsely hirsute; petiolar

*This genus also by Mr. Charles L. Pollard.

gland cupulate, sessile; stipules lanceolate, striate; leaflets linear or oblong-linear, .8-1 cm. long, apiculate or sharply cuspidate, the midvein somewhat eccentric; flowers of medium size, 1 cm. in diameter; sepals linear-acuminate; pod linear, slightly curved, strongly compressed, pubescent.

Collected on a railroad embankment near Bayamon, Porto Rico, January 11 (312). Type in the herbarium of the Field Columbian Museum, Cat. No. 60,312.

A member of the nictitans group but remarkable for its erect habit and sessile petiolar gland. I take pleasure in dedicating the species to Dr. Millspaugh, who has very kindly permitted me to determine the large and interesting collection of Cassia and Chamæcrista collected by him in the West Indies.

Chamæcrista virgata (Sw.) Pollard, comb. nov.

Cassia virgata Sw. Prod. Veg. Ind. Occ., 66. *Ex. char.* South shore of Culebras Island (601).

CHAMÆCRISTA sp.

Juvenile and without fruit characters. Sandy fields at Cataño (189) and Santurce (293), Porto Rico.

Krameria Ishamii sp. nov. Plate lix.

Suffrutescent, strict, tomentose throughout, dense upon the leaves and branchlets. Leaves lanceolate, acuminate 1.3-2 x .3-.4 cm. long-aristate at the tip tapering to the petiole which is one-third the length of the blade, flowers racemose? in the axils of the terminal leaves on all branches, pedicels short bibractiate near the base, bracts linear with a red awn one-third their length; sepals 4 ovate acuminate, scaphoid, posterior petals sarcous, truncate-spatulate, separate at the base, the posterior surface covered with white wax-like more or less regularly disposed maculæ, anterior petals rutilant at the apex, united with themselves and the filaments at the base; stamens 4, in two pairs, the anterior pair shorter, anthers approximate, style crassate cornuate. Fruits (excluding the spines) .7 cm. diameter, pericarp densely tomentose, spines deep red, 3.5 mm. long, retrorsely 6-9-barbed in three lines at the apex.

Sea shore west of the Port of Ponce, Porto Rico (679). Named for Mr. Edward S. Isham, Jr., a member of the expedition, who rendered kindly and frequent assistance to the author throughout the trip.

POINCIANA REGIA Boj. ex. Hook. Bot. Mag. t. 2884.

Cultivated at Santiago de Cuba (Plate xxxvi).

HÆMATOXYLON CAMPECHIANUM Linn. Sp. Pl. 384.

Plentifully planted as a hedge in the suburbs of San Domingo city (822, 824), largely introduced into Jamaica and Grand Cayman (1369, 1371) where it is now scattered all over the interior of the latter island forming, with Psidium Guajava, the main portion of the "brush" with which the old lands and fields are so heavily clothed.

Plentiful and native in the scrubland south of Progreso, Yucatan (1669).

Cæsalpinia Bonducella (Linn.) Flem. As. Res. 11:159. Plate lx.

Guilandina Linn. Shores of the bay of San Juan at Cataño (181), shores of the bay near Charlotte Amalia, St. Thomas, where it is called "Gray Nickars," and in great quantity on Culebras Island; Ratones Island (661) and the shores west of Port of Ponce, Porto Rico. Sea shore south side of Cayman Brac, and north of Spot Bay. Georgetown, Grand Cayman (1250). The legumes of these specimens are different from any other specimens I have seen in that they are strongly pubescent even to the tips of the spines.

Cæsalpinia (*Guilandina*) **Caymanensis** sp. nov. Plate lx.

Shrub 6 feet high, more spreading than Bonducella and thornless, leaves golden-tomentose throughout, branches white-ciliate pinnæ 6-jugal, leaflets 7-jugal elliptical, strongly unequal at the base, mucronate, petiolulate, the stipules converted into a pair of stout recurved thorns, lamina 2-2.7 x 1.5-1.8 cm., golden-pilose on the veins and margin. Flowers (?) not yet developed. Legumes pilose *destitute of spines*, thick pedicelled, 7 x 4 cm., strongly oblique at the base, seeds greenish-leaden 2 x 1.7 (average) cm., the zonal markings plain and regular.

Sea shore north of Georgetown, Grand Cayman (1263). Type in Herb. Field Col. Mus. No. 61,263. Leaves 20 cm. long, pinnæ (median) 9 cm. long, rachis internodes 3-3.5 cm. Differs from its nearest relative C. Bonducella in its smaller leaves and leaflets, thornless stem and spineless pods.

Cæsalpinia bijuga (Linn.) Sw. Obs. 166.

Base of Morro Hill, Santiago de Cuba (1011), and plentiful in the stony scrubland south of the lagoon six kilometers from Progreso, Yucatan (1644).

Cæsalpinia pulcherrima (L.) Sw. *loc. cit.*

Poinciana L. Escaped from cultivation at Merida, Yucatan, (1641 thornless, flowers flame-orange, 1642 flowers bright lemon-yellow) and near Charlotte Amalia, St. Thomas, where it is known as "Dudeldu."

Cæsalpinia Mexicana Agr. Proc. Am. Acad. 5:157.

Specimens evidently this species but larger in all characters were gathered in the arid stony scrublands south of Progreso, Yucatan, (1660).

Crotalaria retusa Linn. Sp. Pl. 715.

Grassy fields and pastures, Cataño (149), 45 cm. high, ligneous at the base; Santurce (267) and Port of Ponce (672), Porto Rico. Suburbs of Charlotte Amalia, St. Thomas (420), where it is known as "Rattle-bush." San Domingo city (771). Dry fields at Port Antonio, Jamaica (942) and at El Caney, Santiago de Cuba (1026). Not seen west of this station.

CROTALARIA VERRUCOSA Linn. *loc. cit.*

Dry fields in the suburbs of Charlotte Amalia, St. Thomas (371, 380, 393, 465, 488). Leaves in all our specimens blunt or crenate, reticulate, white-veined beneath, having much the appearance of an amaranth.

CROTALARIA ANAGYROIDES H. B. K. Nov. Gen. et Sp. 6:404.

Dry hillside at the "Ovens" near Santiago de Cuba (1119, 1125).

CROTALARIA INCANA Linn. *loc. cit.* 716.

Old field center of the island of Grand Cayman (1387).

CROTALARIA PUMILA Orteg. Hort. Matr. 23?

Center of island of Cozumel (1566). Reference doubtful in the absence of fruits. The doubt is, however, slight.

CROTALARIA PUMILA OBCORDATA Griseb. Fl. Br. W. I. 180.

Leaflets 3, mostly obcordate, much smaller than the species, .6-1 x .5-.7 cm., pods 1.2 x .6 cm. prominently beaked, habit more spreading, resembling Medicago lupulina. East shore of Cozumel Island (1578).

MEDICAGO LUPULINA Linn. Sp. Pl. 779.

Dry fields at Walsingham (76) and Hamilton (130), Bermuda.

INDIGOFERA ANIL Linn. Mant. 2:272.

Old fields, an escape from cultivation and apparently well established at Cataño, Porto Rico (191), Charlotte Amalia, St. Thomas (435), San Domingo near the city (881) and near the base of Morro Hill, Santiago de Cuba (1101).

GLIRICIDIA MACULATA H. B. K. Nov. Gen. et Sp. 6:393.

Planted in hedge rows as an ornamental tree at San Domingo city (783), escaped from cultivation to scrublands at San Juan Hill, Santiago de Cuba (1055), and center of the island of Cozumel (1553) where it is called Xak-yaab: "very white," in allusion to the tree when in flower.

BENTHAMANTHA CARIBÆA (Jacq.) Ktze. Rev. Gen. 3:53.

Galega Caribæa Jacq. Select. Am. 212. Genus Benthamantha Alef. in Bonplandia 10:264 (1862). Dry fields south shores of Culebras Island (622). Rare.

BENTHAMANTHA GREENMANNI (Millsp.) Britt. & Baker, Jour. Bot. 38:19.

Cracca Greenmanni (Millsp.) Grassy plain and opens in scrubland near San Miguel, Cozumel (1479). Type from Chichen Itza, Yucatan, collection by myself during the Allison V. Armour expedition of 1895, No. 127. Type in Herb. Field Col. Mus. No. 39,003.

CRACCA CINEREA (L.) Morong. Pl. Parag. 79.

Galega Linn. *Tephrosia* Pers. Low suffrutescent and trailing, scattered in sandy soil, environs of Cataño, Porto Rico (179) and Charlotte Amalia, St. Thomas (486), also at the "Ovens," Santiago de Cuba (1115), and near "The Creek," Cayman Brac (1158), where

it is called "Senna" by the inhabitants, who use the leaves in lieu of that drug in their domestic practice. East shore of Cozumel Island (1576, 1579, 1585), where at one place I found a large patch of about an acre solid of this species alone. A search of this patch, upon my hands and knees, with the greatest care, at 10 a. m., resulted in securing but a single flowering or budding plant, and that with one flower only (1585). Returning to the patch at 3 p. m. I was astonished to find it almost wholly in bloom and many of the plants having well developed legumes (1576, 1579).

Stylosanthes hamata (Linn.) Taub. Abh Bot. Ver. Brand 1889:32.

Hedysarum hamatum Linn. *S. procumbens* Sw. Dry fields and roadsides. Base of Morro Hill, Santiago de Cuba (1077), and along Bodden Bay road, Grand Cayman (1335). All with simple legumes.

The following specimens have a two-celled pod, each cell one seeded, much smaller leaves, less ciliate floral bracts, and more tufted growth, viz.: dry soils about Cataño, Porto Rico (153), and roadsides near Charlotte Amalia, St. Thomas (391).

Meibomia tortuosa (Sw.) Kuntze Rev. Gen. 198.

Hedysarum tortuosum Sw. *Desmodium tortuosum* de C. South shore of Culebras Island (571).

Meibomia Scorpiurus (Sw.) Kuntze *loc. cit.*

Hedysarum Scorpiurus Sw. *Desmodium Scorpiurus* Desv. Waste grounds near San Domingo city (868), and near Port Antonio, Jamaica (1128).

Meibomia supina (Sw.) Britton Enum. Pl. Parag. 83.

Hedysarum supinum Sw. *Desmodium incanum* de C. Fields and open woodlands near Charlotte Amalia, St. Thomas (379, 459, 543), near San Domingo city (830, 836); near Port Antonio, Jamaica (930, 1129), along the Bodden Bay road (1330), and in the center (1384) of Grand Cayman; also center of island of Cozumel (1550).

Meibomia triflora pilosa Kuntze *loc. cit.* 197.

Dry fields at El Caney, Santiago de Cuba (1031), and along Bodden Bay road, Grand Cayman (1800). Boggy soil on grassy mounds center Grand Cayman (1368). From the fruit and seed characters I have little doubt but that the American form of this plant is a distinct species; lack of a full amount of material prevents a more careful consideration of the plants at this time.

Cicer arietinum Linn. Sp. Pl. 738.

Running wild in a garden enclosure at Pedernales Point, Isle of Pines (1407).

Abrus precatorius Linn. Syst. ed. 12: 472.

Apparently indigenous throughout the Antillean islands visited. Climbing over shrubbery at Cataño, Porto Rico (174), near Charlotte Amalia, St. Thomas (513), where it is known as "Jumbee-bead," or "Wild Liquorice;" suburban woodlands near San Domingo city (828), along the shores of the bay Santiago de Cuba (1006), and Bodden Bay road, Grand Cayman (1796). In fruit only at the above stations.

CLITORIA TERNATEA Linn. Sp. Pl. 753.

Climbing over bushes in open fields at Guanica, Porto Rico (728); near Charlotte Amalia, St. Thomas, where it is called "Bluevine" (373, 397, 409, 411); along Bodden Bay road (1318) and in the center (1383) of Grand Cayman.

BRADBURYA VIRGINIANA (Linn.) Kuntze Rev. Gen. 164.

Clitoria Linn. *Centrosema* Bth. Climbing over low bushes at Cataño (154), Caguas (226, 227, 230, 234), Port of Poncé (668), and Guanica (704), Porto Rico. South shore of Culebras Island (608). Environs of Charlotte Amalia (395, 424, 476). San Domingo (879), and Morro Hill, Santiago de Cuba (1100), where its westerly distribution appears to cease, and the next species begins.

BRADBURYA PLUMIERI (Turp.) Kuntze *loc. cit.*

Clitoria Turp. *Centrosema* Bth. Environs of San Domingo city (825, 837), and Port Antonio, Jamaica (1137).

BRADBURYA PUBESCENS (Benth.) Kuntze *loc. cit.*

Centrosema Bth. Climbing tall herbage at Bayamon, Porto Rico (355), near Charlotte Amalia, St. Thomas (423), suburbs of San Domingo city (859), and near Port Antonio, Jamaica (886, 981).

ERYTHRINA CORALLODENDRON Linn. Sp. Pl. 706.

Woodlands on the mountain back of Charlotte Amalia, St. Thomas (523), center of the island, Cozumel (1552), and in the stony arid lands south of Progreso, Yucatan (1666), where it is called "Chacmol-ché," the tree of the god Chacmol.

CALOPOGONIUM ORTHOCARPUM Urb. Symb. Antill. 1: 327.

Rich soil along road near Caguas, Porto Rico (231).

CALOPOGONIUM MUCUNOIDES Desv. An. Sci. Nat. ser. 1, 9: 423.

C. brachycarpum Benth. *Stenolobium brachycarpum* Bth. Waste ground in the suburbs of San Domingo city (801).

CALOPOGONIUM CÆRULEUM Benth. Biol. Centr. Am. Bot. 1:301.

Hedge rows east side of the river at San Domingo city (777).

GALACTIA REGULARIS (Linn.) B. S. P. Prel. Cat. N. Y. 14.

Dolichos Linn. *G. glabella* Michx. Twining among low weeds at Cataño, Porto Rico (159, 251).

GALACTIA VOLUBILIS (Linn.) Britton Mem. Torr. Club 5: 208.

Hedysarum volubile Linn. *G. Mollis* Nutt. South shore of Culebras Island (629).

CANAVALIA OBTUSIFOLIA (Lam.) de C. Prod. 2: 404.

Dolichos Lam. Sandy fields near the sea: Santurce, Porto Rico (278), in great quantity massing the surface of many acres; Charlotte Amalia, St. Thomas (365), where it is called "Sour-eyes"; south shore of Culebras Island (636); center of Ratones Island (660); coco groves at "The Creek" (1170), and south shore Cayman Brac, where it is known as "Wild Bean"; near Port Antonio, Jamaica

(988); shores near Spot Bay, Grand Cayman (1307); shores of Cape Corientes de Cuba (1456), and east shore of Cozumel Island (1584).

Canavalia gladiata (Savi.) de C. Prod, 2: 404.

Malocchia Savi. Nuov. Giorn. Pisa. 8: 113. *C. ensiformis* de C. *loc. cit.* Creeping over bare rocks southwest point of Cayman Brac (1193).

Vigna repens (Linn.) Kuntze Rev. Gen. 212.

Dolichos Linn. *Dolichos luteola* Jacq. *V. luteola* Benth. Rising free among high weeds and grasses at Cataño, Porto Rico (140, 255), Port Antonio, Jamaica (929, 951), and along shores north of Georgetown, Grand Cayman (1241).

Dolichos Lablab Linn. Sp. Pl. 725.

Probably escaped but appearing thoroughly introduced at Cataño (169, 258) and Caguas (201), Porto Rico; Morro Hill, Santiago de Cuba (1103), and along the shore north of Georgetown, Grand Cayman (1396).

Cajan(us) **Cajan** Linn. *comb. nov.*

Cytisus Cajan Linn. *Cajanus Indicus* Spreng. Sandy fields near the sea: at Cataño, Porto Rico (249); near Charlotte Amalia, St. Thomas (482), where it is known as the "Pigeon-pea" and "Vendu bountje", and south shore of Culebras Island (621). Fields at El Caney, Santiago de Cuba (1037), and at Pedernales Point, Isle of Pines (1416).

Dolicholus minimus (Linn.) Medik. Vorl. Chur. Phys. 2: 354.

Dolichos Linn. *Rhynchosia minima* de C. Climbing among low herbs at Cataño, Porto Rico (165), environs of Charlotte Amalia, St. Thomas (422, 485), and at Spot Bay (1283), and Bodden Bay road, Grand Cayman (1349).

Dolicholus phaseoloides (Sw.) *comb. nov.*

Glycine phaseoloides Sw. Prod. Veg. Ind. Occ. 105. *Rhynchosia phaseoloides* de C. Prod. 2: 385. Rich bottom land near Port Antonio, Jamaica (1140).

Dolicholus reticulatus (Sw.) *comb. nov.*

Glycine reticulata (Sw.) *loc. cit. Rhynchosia reticulata* de C. *loc. cit.* Rich soils common at Cataño (252) and Bayamon (342), Porto Rico. Environs of Charlotte Amalia, St. Thomas (376); and south shore of Culebras Island (602, 617, 624).

Moghania strobilifera (Linn.) St. Hil. Desv. Jour. Bot. 1:62.

Hedysarum Linn. *Flemingia* Roxb. Spreading profusely on all lands near Port Antonio, Jamaica (952).

Phaseolus semierectus Linn. Mant. 1:100.

Sandy fields near the coast, Cataño, Porto Rico (168), south of Charlotte Amalia, St. Thomas (413), Guanica, Porto Rico (735), suburbs of San Domingo city (791), near Port Antonio, Jamaica, (899, 977), shores of Santiago Bay, Cuba (1007), and along Bodden Bay road, Grand Cayman (1324).

PHASEOLUS LUNATUS Linn. Sp. Pl. 724.

Thickets, spontaneous south of Charlotte Amalia, St. Thomas (481) and at "The Ovens," Santiago de Cuba (1104).

OXALIDACEÆ.

OXALIS MARTIANA Zucc. Denk. Ak. Muen. 9:144.

O. bipunctata Grah. Rich moist soil of hillsides near Port Antonio, Jamaica (1130). Leaflets broadly ovate 3 x 4.5 cm., emarginate, punctato-glandular and hairy above and beneath, petioles 25 cm. invested with long scattered hairs; scapes 35 cm. somewhat less ciliate than the petioles. Flowers violet-blue 1.5 cm., calyx lobes distinct, each furnished with a pair of oblong brownish glands approximate at the tip.

OXALIS BERLANDIERI Torr. Mex. Bound. Surv. 41.

Infrequent in the open woodlands about Chichen Itza, Yucatan (1633).

ZYGOPHYLLACEÆ.

KALLSTROEMIA MAXIMA Wight & Arn. Prod. 145.

Tribulus L. Sandy spots in grassy fields at Cataño, Porto Rico (162, 336); suburbs of the city of San Domingo (779); margins of cultivated fields Bodden Bay road, Grand Cayman (1342), and grassy knolls, Merida, Yucatan.

Tribulus Alacranensis sp. nov. Plate xlviii & lxi.

Perennial runner. Rootstock long and ligneous, stems many, ligneous, thick (4-7 mm.) 20-24 striate, .5-2.5 meters long; branches nude, ligneous, .5 to 1 meter long, many jointed, joints all about 1.5 cm. long, nodes rough with the withered persistent bracts and stipules of deciduous leaf stems, branchlets infrequent along the branches, mainly aggregated at the tips, very woolly with silvery down, interpetiolar bracts triangular, stipules linear, pointed (1 cm.), usually of the length of the leaf stem from the axil to the first jugæ. Leaf sensitive, closing slowly but too quickly to be flat in the collecting papers, 3-5 cm. long, stem densely silvery-tomentose, leaflets 8-jugal densely tomentose above and below, flowers all terminal, the peduncles during anthesis the length of the leaves, but in mature fruit only one half the length. Flowers bright chrome (Prang YYO) closing early in the sun, about half the size of those of *T. cistoides*, anthers twice the size. Pistil clothed with long, straight hyaline setæ which persist even on the fully ripe fruit. Ripe fruit about one-half the size of that of *T. cistoides*, carpids truncate, somewhat tuberculate, median ridge prominent, 4-6 spined, the main pair divergent, the apical pair very short, the median pair situated near the commissure on the median line of the margins, one or both spines of the median pair frequently wanting. This species has probably developed its special characters through its environment from a parentage in T. cistoides, to which one of its leafy branches, if taken alone, will bear a close gross resemblance; the whole plant, however, in its long, tangled, jointed, woody branches and mass growth, is clearly distinct.

A large mass of this species occupies the south center of Allison Island where its ligneous stems and branches constitute the sole material with which the colony of frigate-birds here construct their large nests (1766). Quite a large area of the species occupies a partly bare spot on the west center of Pajaros Island, which, though much frequented by the frigate-bird, is not used as a nesting ground (1758). A small number of scattered individuals are to be found on Perez Island, which appears to be shunned by all the sea birds of the other islands (1752). Chica Island, though much frequented by the frigate-bird, failed to yield a single specimen of the plant.

Tribulus cistoides Linn. Sp. Pl. 387.

Prevalent upon the upper sands of the beach at Progreso, Yucatan (1737), but especially so in the clear sand of the city lots. Careful search of the Caymans, Isle of Pines, Cape Corientes and Cozumel failed to reveal this species. Neither Mr. Fawcett nor Mr. Hitchcock have found it on the Caymans, nor Dr. Gaumer on Cozumel.

RUTACEÆ.

Esenbeckia pentaphylla (Macf.) Griseb. Fl. Br. W. I. 135.

Galipea Macf. Woodlands near San Miguel, Cozumel (1475), in fruit only. Leaflets 7.5 x 3.2 cm. mostly in threes, rarely in fives.

Zanthoxylum emarginatum (Sw.) Sw. Fl. Ind. Occ. 1:572.

Fagara Sw. *Tobinia* Desv. *Sapindus Spinosus* (Linn.) Rocky woodlands near Spot Bay, Grand Cayman (1274).

SIMARUBACEÆ.

Suriana maritima Linn. Sp. Pl., 284.

Islets in Hamilton Bay, Bermuda (69), shrubs, small clusters of fruit very large. South shores of Culebras Island (644) and on Ratones Island (655), Porto Rico. Shores of Santiago Bay, Cuba (1022), fruit clusters meager. The Creek, Cayman Brac, leaves very short, neither in flower nor fruit (1151); the plant is here called "Juniper," and an infusion of the bark is drunk as a cure for toothache. Shore near Georgetown, Grand Cayman (1253) similar to the plants of Cayman Brac. Rocky shores Pedernales Point, Isle of Pines (1430), leaves short and broad, flowers small. East shore Cozumel (1587), branches nude, leaves in tufts at tips. Shore line of Progreso, Yucatan (1649), very leafy. Fringing the open sea beach of the west shore of Perez Island, Alacran Shoals (1748), low and straggling. (See description of shoal in Part II of this publication.) A single plant not over four years old at the southeast point of Pajaros Island, left undisturbed.

Alvaradoa amorphoides Liebm. Kjoeb. Vid. Med. 1853: 100.

Woods near Spot Bay, Grand Cayman (1282), one tree only noted, a female, about 25 feet high. Plentiful at Chichen Itza, Yucatan, where it is called by the Yucatecans "Palo de Ormigas" or "Wood of the Ants," and by the Mayas Xbexinic-che, conveying the same idea.

BURSERACEÆ.

BURSERA GUMMIFERA Linn. Sp. Pl. 471.

Bursera Simaruba Sarg. Island of Culebras, infrequent, Pedernales Point, Isle of Pines, Cape Corientes, Cuba, center of Island Cozumel, and Chichen Itza, Yucatan.

MELIACEÆ.

MELIA AZEDARACH Linn. Sp. Pl. 384.

Cultivated or escaped to fence rows and opens suburbs of San Domingo (788); center of Island, Grand Cayman (1354); and San Miguel, Cozumel (1573). Cataño (173) and Guanica (749), Porto Rico.

CEDRELA ODORATA Linn. Syst. ed. x: 940.

Plentiful in woodlands throughout the peninsula of Yucatan. Plate xliii.

MALPIGHIACEÆ.

TETRAPTERIS MEXICANA H. & A. Bot. Beechy. 281.

In fruit only. San Miguel, Island of Cozumel (1484).

STIGMAPHYLLON SAGRAEANUM A. Juss. Arch. Mus. Par. 3: 379.

Charlotte Amalia, St. Thomas (400). Leaves oblong-lanceolate cordate, apiculate 5-7 x 1-2 cm., densely and strongly reticulate. Fields near El Caney, Santiago de Cuba (1036), leaves oblong truncate, apiculate 4-5 x 1.5-2.5 cm. Port of Poncé, Porto Rico (662); and Culebras Island (599), leaves ovate sub-cordate, apiculate 4-5 x 2.7-3 cm.

STIGMAPHYLLON EMARGINATUM (Cav.) A. Juss. *loc. cit.* 382.

Banisteria Cav. A small and somewhat depauperate specimen gathered in the environs of San Domingo city (835).

STIGMAPHYLLON DIVERSIFOLIUM (Kunth.) A. Juss. *loc. cit.* 381.

Banisteria Kunth. Santurce, Porto Rico (262), the large, broad ovate leaved form (11.5-14 x 7-8.5 cm.) similar to Sintenis 3843 from Guanica. Shores of the bay at Santiago de Cuba (1010), the small, narrowly oblong-linear leaved form like Wright's 2154, 2155, Cuba, leaves 3.5-4 x .6-1 cm. Isle of Pines at Pedernales Point (1419), leaves oval 6.7 x 2.5-3.5 cm.

POLYGALACEÆ.

POLYGALA PANICULATA Linn. Syst. ed. x, 1154.

Plentiful in dry rocky soils near Bayamon, Porto Rico (316). Simple or greatly branching, strict, racemes slender, many flowered.

POLYGALA ANGUSTIFOLIA H. B. K. Nov. Gen. et Sp. 5:405.

Dry soil near Charlotte Amalia, St. Thomas (464), rare, only one specimen seen.

EUPHORBIACEÆ.

Phyllanthus Carolinensis Walt. Fl. Carol., 228.
Paths and old gardens near San Miguel, Cozumel (1487, 1488).

Phyllanthus Niruri Linn. Sp. Pl. 981.
Dry sandy banks, walks and roadsides near Caguas (223), Bayamon (320), and Guanica (729), Porto Rico; Charlotte Amalia, St. Thomas (499, 502); south shores of Culebras Island (1778); Port Antonio, Jamaica (938); Bodden Bay road (1339), and in the center of the island (1363), Grand Cayman; and near San Miguel, Cozumel (1468).

Drypetes glauca Vahl. Eclog. 3:49?
Seaside shrub near Santurce, Porto Rico (265). In our specimens, as in those of several South Florida collectors, the leaves are ovate and the margins strongly crenate-dentate with long, sharp holly-like spines terminating the teeth. Our plants being in leaf only, farther discriminating characters are wanting to settle upon the specific nature of this form.

Croton Astroites Dryand Ait. Hort. Kew. 3: 375.
Mountain woods back of Charlotte Amalia, St. Thomas (372, 392, 448, 463), where it is called "White Maran," and south shores of Culebras Island (605).

Croton balsamifer Jacq. Enum. Pl. Carib. 32.
Hillsides facing the bay of Guanica, Porto Rico (761).

Croton betulinus Vahl. Symb. Bot. 2:98.
Old pastures south of Charlotte Amalia, St. Thomas (462).

Croton Cascarilla (L.) Linn. Sp. Pl. ed. 2: 1423.
Clutia Cascarilla Linn. Dry banks west of Port Antonio, Jamaica (986). Leaves oblong or oblong-spatulate, slightly emarginate 2.5 x 1 cm.

Croton Cascarilla linearis (Jacq.) Griseb. Fl. Br. W. I. 28.
Croton linearis Jacq. Enum. Pl. Carib. 32. Upper beach of the seashore at the southwest point of Cayman Brac (1217), and at Spot Bay, Grand Cayman (1312).

Croton Trinitatis nom. nov.
Geiseleria chamædryfolia Klot. Hook. Lond. Jour. Bot. 2:47. *C. chamædryfolius* Griseb. Fl. Br. W. I. 41 (1864) *non* Lam. Ency. 2:214 (1786). Both Klotzsch's and Grisebach's names having already been used in this genus, I have returned the species to its original geographic station, the Trinity Islands. Seashore dunes at Santurce, Porto Rico (280).

Croton ciliato-glandulosus Ortega Hort. Matr. 51.
Sea shores east side of Cozumel Island (1593).

Croton discolor Willd. Sp. Pl. 4: 582.
A straggling shrub on the south shores of Culebras Island (758).

CROTON FLAVENS Linn. Pl. Jam. Pugill. 28.
Sea shores south of Charlotte Amalia, St. Thomas (377, 378, 533, 538), south shore of Culebras Island (615), and dry scrubland south of Progreso, Yucatan (1664).

CROTON LOBATUS Linn. Sp. Pl. 1005.
Open woodlands above Charlotte Amalia, St. Thomas (461).

CROTON LUCIDUS Linn. Pl. Jam. Pugill. 28.
Sea shores and borders of brackish lagoons: Guanica, Porto Rico (692); base of Morro Hill, bay of Santiago de Cuba (1099); and southwest point of Cayman Brac (1199, 1204, 1206, 1216).

CROTON MARITIMUS Walt. Fl. Carol. 239.
Clear sand of the sea beach only, at Progreso, Yucatan, 1727.

CROTON OVALIFOLIUS Vahl. in West. Bidr. Ste-Croix, 307.
Very plentiful and variable in leaf form, along roadsides and in pastures about Charlotte Amalia, St. Thomas (388, 468, 473, 478, 537).

ARGITHAMNIA CANDICANS Sw. Prod. Veg. Ind. Occ. 39.
Dunes of the seashore at Santurce, Porto Rico (273, 274).

MERCURIALIS ANNUA Linn. Sp. Pl. 1035.
Roadsides at Walsingham, Bermuda (89, 108).

Bernardia Bernardia (Linn.) comb. nov.
Adelia Bernardia Linn. Syst. ed. x: 1298. *B. dichotoma* Muell. Arg. Linn. 34: 172. *B. carpinifolia* Griseb. Fl. Brit. W. I. 45. Among other seashore shrubbery north of Georgetown, Grand Cayman (1265).

ACALYPHA ALOPECUROIDEA Jacq. Ic. Rar. 3:19.
Waste grounds near San Domingo city (773); San Juan Hill, Santiago de Cuba (1046); and near San Miguel, Cozumel (1544), where it is called X-nix-kax, "Clinging-bunch," from its dense fasiculate growth.

TRAGIA URTICÆFOLIA Michx. Fl. Bor. Am. 2:176.
Among shrubbery and herbage at Guanica, Porto Rico (696, 762).

TRAGIA VOLUBILIS Linn. Sp. Pl. 980.
Climbing among low shrubbery along roadsides near Charlotte Amalia, St. Thomas (457, 460). South shore of Culebras Island (606).

RICINUS COMMUNIS Linn. Sp. Pl. 1007.
Thoroughly naturalized in all open situations at Guanica, Porto Rico (711); environs of San Domingo city; center of the island of Grand Cayman (1389), and on Cozumel Island.

ALEURITES MOLUCCANA (L.) Willd. Spec. 4:590.
Jatropha Linn. *A. triloba* Forst. Old garden on the Bodden Bay road, Grand Cayman (1337), where it is called "walnut" and used as an emetic.

Manihot Manihot (Linn.) Cockl. Bull. Torr. Club. 19:95.

In an old fallow field near Hamilton, Bermuda (136), and in a cultivated field near Spot Bay, Grand Cayman (1293).

Jatropha curcas Linn. Sp. Pl. 1006.

Old field at Cataño, Porto Rico (187).

Jatropha gossypifolia Linn. *loc. cit.*

Old fields at Caguas (225) and Guanica (724), Porto Rico; near Charlotte Amalia, St. Thomas (442), and in the environs of San Domingo city (873).

Jatropha urens stimulosa (Michx.) Muell. de C. Prod. 15:1101.

Jatropha stimulosa Michx. Frequent in the arid stony scrublands south of Progreso, Yucatan (1662).

Jatropha Portoricensis sp. nov. Plate lxii.

§ Curcas §§ Loureira. Leaves strongly peltate, trifid, circular at the base, the lobes fusiform pointed, sinus rounded, margins entire; glaucous beneath, polished above; stipules subulate, early deciduous; petioles nearly or quite as long as the limb; cymes tri-dichotomous, bracts small deltoid, acuminate; male calyx segments ovate acute, petals somewhat spatulate obtuse nearly free below, female calyx caryophyllous tube thrice the length of the male; stamens 10, the 5 inferior free and shorter than the connate interior 5 whose filaments are united for the lower two-thirds, anthers all alike; ovary smooth apparently three ridged, styles united only at the base, stigmas binate claveate. Fruit .....

A tall shrubby form, strict and glabrous, branches wine-colored below, lurid toward the young tips; leaves 10-13 cm. broad, 10-11 cm. long, petioles 8-9 cm. long; main peduncle 3 cm. long, branching 2-4 cm., cyme about 12 cm. broad. The species differs from J. hernandiæfolia Vent. in its leaves being all trifid with entire margins, its short peduncle, acute calyx segments and general habit.

Dry hillside on the shore of the bay of Guanica, Porto Rico (700).

Omphalandria linearibracteata sp. nov.

Bracts narrowly linear apiculate, not revolute margined, thrice as long as their petioles, biglandular at the attenuate base, cymes tri-dichotomous densiflorous, stamineal column triantherous at the dilated apex, ovary glabrous, with a cluster of three ovoid nectaries at the base, inflorescence scattered-pilose. Stipules large, foliacious biglandular as in the leaves.

A thick-stemmed fleshy shrub about 2 meters high, branching at the top. Stipules a counterpart of the leaves 5 x 7 cm.; leaves broadly ovate, some sagittate, obtuse, deeply cordate pinnately (7-8 jugæ) veined, 22 cm. long by 16-18 cm. broad, densely papillate above, finely and densely short-pilose beneath; venation densely reticulated beneath, all the veins *flat* as if compressed; glands 2, large, mammiliform 6 mm. in diameter, close to the base of the leaf, petiole 10 cm. long, broadened at the base. Inflorescence thyrsoidal 34-36 cm. long, basal branches 7-12 cm. long, main peduncle 8 mm. thick; bracts linear 3-6 cm. long, petioles filiform 1-2 cm. long.

Apparently between O. commutata (Muell.) Ktze. and O. trichotoma (Muell.) Ktze., differing from both in its linear bracts, flat veins, thyrsoid inflorescence, and general characters.

Flat sandy fields near the coast at Cape Corientes, Cuba (1462).

EUPHORBIA BUXIFOLIA Lam., Dict. ii; 421.

A very large number of examples of this species were collected and a still greater number examined in the field, from which the following characters are drawn:

E. glabrata Sw. Prodr. 76, *E. littoralis* Kth., H. B. K., Nov. Gen. et Sp. ii. 44; *E. salina* Willd. in Hb., *E. mesembrianthemifolia* Jacq. Stirp. Am. 151. Suffruticose, glabrous; leaves sarcous, ovate, pointed, entire; lower stipules deltoid, median triangular, those of the apical leaves generally geminate, all more or less fringed or long setose-fimbriate. Involucres few at the apices of the branchlets, turbinate, smooth without and within, glands 4 concave, appendages white, longer than broad, margin entire or tending toward crenation, lobes triangular-truncate, mostly bifid at the apex, the two flanking the sulcus broader and 3-8 fimbriate, fifth gland replaced by a deep sulcus from which rises a long narrow digit-like process of the involucre (false lobe). Seeds 1.4 mm. long, 1.1 mm. broad, ashen, nearly globular, the lateral and dorsal angles being barely raised above the plane of the facets, dorsal facets plainly but slightly transverse anastomo-rugose, ventral markings the same but slighter. Shores of islets, Hamilton Bay, Bermuda (6.10). Sea shore at Santurce, Porto Rico (276); Charlotte Amalia, St. Thomas (494); Ratones Island, Port of Ponce (658), and shores of Port of Ponce (670, 671), Porto Rico; east shore of Cozumel Island (1591); shores at Progreso, Yucatan (1646); Perez, Allison and Pajaros Islands, Alacran Shoals (1751, 1761), Isle of Pines, Cuba (1432).

Forma **reclinata**: Similar to the species but nearly prostrate in habit, with larger and broader leaves, broader blepharose stipules and shorter and denser branchlets. Perez, Pajaros and Allison Islands, Alacran Shoals (1739, 1763, 1769).

Forma **seminuda**: Similar to the species but with long, nearly nude, zig-zag stem and branches, internodes 1 to 2 cm. long, branchlets leafy, stipules as in the previous form but narrower. Perez Island, Alacran Shoals (1738[a], 1742).

Forma **florida**: Similar to the last but with very small leaves on the branchlets which are so densely crowded with flowers and fruits as to appear like capitate clusters protruding from the bare branches. East shores of Cozumel Island (1589); Perez, Chico and Pajaros Islands, Alacran Shoals (1738, 1739, 1747, 1751, 1762).

EUPHORBIA BUXIFOLIA FLEXUOSA (Kth.) Boiss., in de C. Prod. xv: 15.

Plant pale green, stems flexuous, with comparatively long internodes. Stipules deltoid broad at the base, shallow-fringed at the apex; leaves oval-oblong or ovate, cordate-auriculate at the base, the majority of them showing a tendency to, or actually slight denticulate at the apex, barely mucronulate. Involucres sparse, somewhat

larger than in the species and *hairy within,* lobes broadly deltoid ciliate, appendages creamy, larger than in the species, somewhat flabelliform and more sarcous. Seeds 1.2 mm. x .9 mm. (*smaller than in the species*), the reticulations much more strongly marked. Southwest Point, and southern shores of Cayman Brac (1196, 1233). Scattered and infrequent.

Euphorbia buxifolia ramosissima var. nov.

Erect, profusely short branched from the base appearing like a ball when growing. Leaves exceeding numerous, small, 7 x 3.5 mm. obliquely auriculate-cordate at base, absolutely entire at the simply acute apex. Involucres usually sparse, pedicels as long or longer than the involucre which is of the size of the species, glands smaller, appendages larger, hairiness of internal surface of involucre pronounced but not so marked as in *var. flexuosa Boiss.* Seeds 1 x .7 mm. smaller than the species or var. flexuosa, dorsal angle forming a prominent keel, reticulations barely visible. The Creek, Cayman Brac (1180), Georgetown, Grand Cayman (1262). Not plentiful at either place.

All the forms of E. buxifolia prefer a locality where the wind sweeps free from the open sea. They are rarely found at all on the sandy shores of bays or straits. Careful search of the shores of Santiago and San Juan bays failed to yield a single specimen.

Euphorbia pilulifera L., Am. Ac. 3:114.

The usual erect form with broad and large leaves was taken at Cataño, Porto Rico (329), and Charlotte Amalia, St. Thomas (489, 490); and the narrower leaved form having a tendency to being simple stemmed, at Cataño, Porto Rico (1775); Charlotte Amalia, St. Thomas (426, 396), and San Domingo (846).

Euphorbia pilulifera discolor Engelm., Bot. Mex. Bound. 188.

Although included under the species by Boissier, I consider this form of sufficient persistence to constitute a good variety, with its lurid-maculate leaves, extreme obliquity of leaf base, and ascending habit. Santiago de Cuba (1063) and Port Antonio, Jamaica (949). A form of this variety having all the characters except the maculation was taken at Cayman Brac (1175).

Euphorbia pilulifera procumbens Boiss., in de C. Prod. xv:21.

This pronounced variety with its bifurcating branchlets, small short-petioled strigose-hairy leaves, taken at Hamilton, Bermuda (124); Spot Bay, Grand Cayman (1292, 1298, 1213), and on Culebras Island (567), where it is very plentiful in the open grounds near the little settlement on the south shore.

Euphorbia Cozumelensis sp. nov. Plate lxiii.

Annual, prostrate, or erect when growing among grasses, glabrous; stems many, ligneous, internodes short; stipules deltoid lacerate on the outer margin; stems and branches densely leafy, leaves oval or ovate, strongly oblique, and sharply dentate, especially at the apex and along the lower margin, mostly lurid above and pale whitey-green beneath. Inflorescence in sessile few flowered terminal clus-

ters; involucres subsessile, turbinate, lobes triangular margined with a fringe of long strict white hairs; glands 4, elliptical, pale green, appendages bright red or lurid, the margin entire, the two flanking the sulcus larger, fifth gland replaced by a deep triangular sulcus in the involucre. Capsule smooth, deeply trisulcate; carpids strongly angled; seeds pink-ashen .8 x .65 mm., strongly triangular with a sharp dorsal ridge; facets all convex, anastomosingly and interruptedly transverse ridged, two main ridges on the ventral and four on the dorsal facets.

Branches of the prostrate plants 10-18 cm., of the ascending 20-36 cm. long; leaves at the nodes 8-10 x 6-7 mm., internodes 1-2 cm., petioles 1.5-2 mm., involucres 1.5 mm. This species appears to connect E. Berteriana Balb. with E. capitellata Eng., both of which are hirtellate and have widely differing characters. The species grows luxuriantly in the grass of the southwestern and northern shores of the Island of Cozumel and in the sands of the northeastern point (1604, 1605, 1606, 1608, 1609, 1611, a fine series of varying habit). Type in Herb. Field Col. Mus. No. 61606.

Euphorbia Cozumelensis pilosulca var. nov.

Differs from the species in its open lax growth, long internodes, larger nodal leaves, white glandular appendages, larger brownish-red seeds with concave facets, and the presence of long, straight hairs in the sulci of the capsules. A very strongly characterized variety 12-35 cm. growth, internodes 2.5-4.5 cm., nodal leaves 11-15 x 7-10 mm., petioles 2-3 mm., seeds .9 x .7 mm., the facets marked as in the species. West shore of Cozumel in sand at the base of coco trees near the village of San Miguel (1501, 1502).

EUPHORBIA CRASSINODIS Urban Symb. Antill. 1:340.

Type collected in Cuba by Wright, No: 2014, placed under *E. serpens* by Grisebach in his Cat. 20; the following characters drawn from the type kindly communicated to me by Prof. Urban, should be added to his description:

Involucral lobes entire except the pair flanking the sulcus, which are each one-papillate on the margin toward the sulcus; the pilosity of the involucre is not constant; glands 4, sub-equal, those nearest the sulcus larger, and larger appendaged; appendages small, erose-margined; fifth gland represented by a long slender awn-like prolongation of the involucral tissue at the base of the sulcus. Capsule* smooth, deeply triculcate, carpids sharply red-keeled; seeds smooth, pinkish, .85x.65 mm., obtusely triangular, the dorsal angle the sharpest, facets all convex.

The affinity of this species is to E. serpens H. B. K. My specimens were collected in the cracks of the masonry of the range roof Morro Castle, Santiago de Cuba (1061).

Euphorbia pileoides sp. nov. Plate lxiv.

Annual, prostrate, glabrous throughout; stems and branches attenuate; stipules blepharose on the upper surface of the branchlets, triangular or deltoid underneath, margin papyraceous entire erose or

*The following characters drawn from plants of my collection.

somewhat denticulate; leaves small, broadly ovate to orbicular, entire, oblique cordate, retuse, mucronulate, somewhat sarcous. Inflorescence single in the upper axils of the branchlets; involucre minute a mere expansion of the apex of the short thick pedicel; lobes triangular, the apices prolonged beyond the glandular appendages, entire except the two flanking the rudimentary fifth gland, which are 2-dentate on each side; glands minute, transversely oval, plicate, raised on a short pedicel; appendages white, scant, three-crenate; fifth gland represented by an aristate prolongation of the involucral tissue as long as the true lobes. Capsule smooth shallowly three-sulcate; carpids round angled; seeds pink, triangular 1 x .8 mm., the dorsal angle the most prominent, dorsal facets strongly convex, ventral concave, all smooth and devoid of markings.

Stems 20-30 cm. long, branches 3-5 cm., internodes 1.5 cm., nodal leaves 3 x 2.5-3 mm., involucres .5-.75 mm. General habit that of Pilea muscosa, related to E. serpens radicans and E. crassinodis from which it differs in its thicker retuse leaves, involucral characters and larger seeds. Type from roadsides at Guanica, Porto Rico (743), in Herb. Field Col. Mus. No. 60743.

Euphorbia Andromedæ sp. nov. Plate lxv.

Annual, prostrate, glabrous, with an almost inextricable mass of short stems and branches proceeding from the crown of the root-stalk, internodes short; stipules deltoid the free margin cut into from 3-5 teeth; leaves oval to nearly orbicular, the base cordate and unequal, the apex rounded, blunt serrate especially about the apex, petioles about one-quarter the length of the leaf. Inflorescence single in the axils of the upper leaves; involucres campanulate, pedicel about one-third the length of the tube; lobes dentiform entire except the two flanking the sulcus each of which have a lateral tooth on the approximate margins; glands minute transverse-oval, appendages oval entire, the two next the sulcus larger; fifth gland represented by a tooth-like prolongation of the involucral tissue at the base of the shallow sulcus. Capsule smooth, deeply tri-sulcate; carpids sharply keeled; seeds reddish-brown .8 x .6 mm., bluntly triangular, all the facets convex and slightly roughened by minute anastomosing ridges, ventral furrow deep.

Near E. serpens H. B. K. The species differs from E. crassinodis Urb. in its leaves, the length of the false gland, the entire appendages, and particularly in the seeds. Stems and branches 4-8 cm. long; larger leaves 2.5-3 mm. Found growing in the bottom of shallow and deep pockets in the coral sea wall at Cape Corientes, Cuba, within the reach of the spray of the waves at high tide (1466). Type in Herb. Field Col. Mus. No. 61466.

Euphorbia articulata Aubl. Pl. Guin. 1:480.

E. linearis Retz. (*E. articulata* Andersss. Vet. Akad. Handl. Stockh. 1853 (1855):236 from the Galapagos Islands is another species: **E. Anderssonii** nom. nov.) Upper leaves ovate terminating the branchlets, the others ovate-lanceolate to lanceolate-linear, all apiculate and oblique at the base, the ovate small .8-1 x .6 cm., the ovate-lanceolate 1.6 x .7 cm., the linear 4 x .6 cm. Santurce,

Porto Rico (1776, 275 pt.). Specimens from the south coast of Culebras Island (1781, 625 pt.) have narrower leaves, but all the characters of the species. Specimens with very long leaves 5-6 x .6 cm. from the sandy sea beach west of Port of Poncé, Porto Rico (675). In this species the lobes of the involucre are almost without special form, being involved in the structure of the hairy ring that surrounds the internal involucral-margin; in our specimens the glands have no vestige of appendages, the fifth gland is replaced by a very slight sulcus flanked by two larger involucral lobes (?). The seeds are ovate 2.1 x 1.3 mm., apiculate, the dorsal angle obsolete, all facets scrobiculate.

EUPHORBIA ARMOURII Millsp. Field Col. Mus. Bot. 1:28, pl. 2.

Open glade beyond (east of) San Miguel, Cozumel (1569, 1570). Of these specimens 1569 corresponds exactly with the type while 1570 has minute leaves 4-6 x 3-4 mm., and the general habit appearance of E. astroites F. & M., but with seeds and involucres typical of Armourii. This species is clearly distinct from E. ocymoidea L. to which it bears a close habit resemblance.

EUPHORBIA MAYANA Millsp. Field Col. Mus. Bot. 1:304, pl. 16.

Chichen Itza, the ancient capital city of the sacred Mayan Itzæ, Yucatan (1619). The plants of this collection agree exactly with the type.

EUPHORBIA PETIOLARIS Sims Bot. Mag. t. 883.

Waste grounds in the suburbs of Charlotte Amalia, St. Thomas (477); and in maritime thickets along the south shore of Culebras Island (603).

EUPHORBIA HETEROPHYLLA Linn. Am. Acad. 3:112.

Borders of open woods and in fallow fields near Walsingham, Bermuda (87); ditches in the suburbs of San Domingo city (844); about San Miguel, Cozumel (1504); open woods Chichen Itza, Yucatan (1627, 1629); and fields south of Progreso (1680). The usual forms of the species.

EUPHORBIA HETEROPHYLLA GRAMINIFOLIA Engelm. Bot. Mex. Bound. 190.

Old fallow clearings near Walsingham, Bermuda (105); suburban fields San Domingo city (841); fallow clearings near the center of the island of Grand Cayman (1374); at Spot Bay (1783); and near Georgetown (1394). The usual form of this variety with a profusion of linear-lanceolate leaves from 4.5-6.5 x .6 cm.

EUPHORBIA HETEROPHYLLA CYATHOPHORA (Murr.) Boiss. in de C. Prod. 15:262.

Old fields suburbs of Charlotte Amalia, St. Thomas (453), and Cataño, Porto Rico (1774). Leaves all cyathoform from the base to the apical inflorescence.

EUPHORBIA HYPERICIFOLIA Linn. Sp. Pl. 154.

The field of this cruise being that from which Linnæus' plants were derived, from a combination of several forms of which he formulated the type description of this species, I took pains to gather

a large number of examples of the following: Walsingham and Hamilton roadsides, Bermuda (83, 1784); borders of cultivated fields Guanica, Porto Rico (736, 753); grassy fields and roadsides near Charlotte Amalia, St. Thomas (382, 430, 487, 493); old fields south shore of Culebras Island (1777); roadsides and railroad beds near Port Antonio, Jamaica (950, 972, 973, 998, 1785); cultivated ground and grassy fields near Spot Bay, Grand Cayman (1291, 1304); and an ill-kept garden near San Miguel, Cozumel (1546).

Euphorbia Brasiliensis Lam Encyc. 2:423.

This species bears a very close habit resemblance to the preceding; it is, however, readily recognized by its black seeds. Fields near Caguas and Bayamon, Porto Rico (247, 317); grassy places near Charlotte Amalia, St. Thomas (398); rich soils near Port Antonio, Jamaica (939, 943, 959), and dry fields at El Caney, Santiago de Cuba (1034).

Euphorbia Karwinskyi Boiss. Cent. Euph. 6.

Dry, barren opens south of the lagoon at Progreso, Yucatan (1696). In this species the involucre (according to the type specimen collected "Mexico and Huajaca, Karwinsky,") is hairy exteriorly, the involucral lobes are triangular-lanceolate, the glands minute, the fifth being replaced by an obtriangular sulcus flanked by slightly enlarged lobes, the appendages are minute crenated or wanting, and the seeds pink or salmon-color, ovate-tetrangular .9 x .6 mm., the ventral facets slightly 4-rugose transversely, the dorsal still more slightly rugose, and the angle prominent.

Euphorbia stipitata sp. nov. Plate lxvi.

Annual, prostrate, stems and branches glabrous, internodes long, stipules slender cylindro-aristate entire; petioles short, leaves all ovate-oblong, cordate and strongly oblique at the base: blunt at the apex, pilose beneath, crenate-dentate except at the base. Inflorescence in terminal many-flowered short peduncled cymose clusters, pedicels about the length of the peduncle and the involucre; involucres hairy, sub-campanulate or cylindro-campanulate, lobes triangular very hairy, glands 4, circular, raised on long stipes, appendages small, rounded, white, attached to the stipe beneath and a little below the gland, fifth gland represented by a broad, deep, round-based sulcus. Capsules pilose, carpids acute-angled, seeds pink-ashen 1.05 x .65 mm., bluntly quadrangular, the dorsal facets plane, the ventral slightly concave, all facets slightly marked by interlocking (not anastomosing) ridges.

Stems and branches glabrous except at their very tips 18-30 cm. long, internodes 3.5-4 cm., nodal leaves 10-13 x 5-7 mm., involucres 1 mm. Related to E. maculata L., from which it differs in its glabrous stems, immaculate supra-glabrous larger leaves, entire cylindro-aristate stipules, and strong seed characters. Specimens from moist, sandy pasture field near Guanica, Porto Rico (1782). Type in Field Col. Mus. Herb. No. 61782.

Euphorbia Bermudiana sp. nov. Plate lxvii.

Annual, prostrate with the general habit of E. maculata L.,

glabrous throughout, branches densely leafy; stipules all triangular, the sides fimbriate, the apices lacerate, those on the upper side of the branches tending toward bilobation at the apex; leaves oval-oblong, narrowed at the oblique base, blunt at the serrulate apex. Inflorescence solitary in the axils of the upper leaves, involucre glabrous, short pedicelled tubulo-campanulate, lobes blunt-triangular papillate, the two flanking the sulcus larger; glands 4, small, cupuliform, appendages rudimentary or most often wanting, fifth gland replaced by a thread-like prolongation of the involucral tissue at the base of the very shallow sulcus; capsule shallowly trisulcate, carpids bluntly keeled; seeds brownish-red, farinose, quadrangular, 11 x .9 mm., dorsal facets convex, ventral very slightly concave; markings discernable, but too slight to take on describable form.

Stems and branches 10-20 cm., internodes 8-10 mm., nodal leaves 5-8 x 3.5-4 mm. This species, which in general habit closely resembles E. maculata L., is probably the plant reported in Bermudan collections as that species, but I could not find it on the islands. E. Bermudiana is common in general, but especially so at Paget's (2, 41), on the islets in Hamilton Bay (7, 9), and about Walsingham (101). It differs from E. maculata in its lack of hairiness, and in its floral and seed characters. Type in Field Col. Mus. Herb. No. 60101.

EUPHORBIA BLODGETTII (Engelm. in Herb.) Hitch. Rep. Mo. Bot. Gard. 1893:126.

Type collected at Key West by Blodgett and distributed as *E. inaequilatera* by Chapman. Also collected in South Florida by Chapman and Curtiss, and on Nassau, Cat, Eleuthera, Crooked, Fortune, Inagua, Jamaica and Grand Cayman Islands by A. S. Hitchcock.

The following characters, in addition to those given by Hitchcock, are drawn from the type: Involucral lobes triangular-lanceolate, entire though appearing fimbriate on account of their large hairs, the two lobes flanking the sulcus apparently larger; glands 4, small oval, their appendages various in form, the two next the sulcus always largest and usually 3-crenate on the margin, the two smaller appendages entire, notched, or 2-3-crenate; the fifth gland represented by an awn-shaped prolongation of the involucral tissue at the base of the obtuse sulcus. Seeds red-pink, farinose, quadrangular 1 x .8 mm., the dorsal facets convex, the ventral slightly concave; dorsal facets very slightly marked by interlocking transverse ridges.

Related to E. stipitata Millsp., from which its characters readily separate it. Sandy paths near Georgetown (1257, 1258), Spot Bay (1314), and Bodden Bay Road (1333), Grand Cayman.

EUPHORBIA PROSTRATA Ait. Hort. Kew. ed. 1, 2:189.

The pilosity of the angles of the otherwise smooth pod is a striking characteristic of this species which in its general habit might otherwise be mistaken for E. maculata L.

To the characters as elaborated by Boissier in his Cent. Euph., the following, drawn from the type, might be added: Involucral lobes bluntly triangular, papillate, the two flanking the sulcus generally larger, glands 4, small, plicate, appendages rudimentary or wanting,

fifth gland replaced by a shallow unoccupied sulcus. Seeds pink-ashen, sharply triangular .9 x .6 mm., the dorsal facets slightly convex, the ventral as slightly concave, all marked by 5-6 sharp transverse ridges, two or sometimes three of which anastomose, and all include the angles.

Infrequent at Walsingham, Bermuda (114), at Cataño, Porto Rico (334), and on the south shores of Culebras Island (1779).

Euphorbia pergamena Small Bull. Torr. Club, 25:615.

Plentiful at the base of trees, stumps and stones near the sea at Pedernales Point, Isle of Pines (1436, 1442, 1443).

The following characters drawn from the type, collected at Miami, Florida, November, 1878, by Dr. A. P. Garber and distributed as E. albomarginata, should be added to Dr. Small's description:

Stipules linear, entire, about twice the length of the petioles; fifth gland represented by a broad and deep triangular sulcus flanked by larger triangular involucral lobes, and the glands next each of these lobes long-appendaged with large oblique (auricular) and somewhat irregularly crenate appendages. Seeds ashen, .85 x .6 mm., strongly tetragono-pyramidal, slightly curved; facets transversely deep 4-sulcate and 5-ridged, the ridges affecting the angles.

The affinity of this species is close to E. adenoptera, as it comes under Boissier's sub-section †† *Involucri appendices superiores* (*exteriores*), *binæ, obliquæ, auriformes, duabus inferioribus multo majores.* My specimens from the Isle of Pines differ much in general habit among themselves and from the type, and the leaves are considerably less strongly serrate, yet they are good examples of the species.

Euphorbia trichotoma Kth., H. B. K., Nov. Gen. 2:60.

The true form of the species very bushy and exuberantly leafy, making a compact mass. Involucres scarce, appearing near the ends of the branchlets. Leaves thin, spatulate, serrate at the blunt apex; glands large, yellow, ostreaform, slightly crenulate on the free margin; lobes deltoid, slightly hairy. Capsules minutely tuberculate-scabrous. Seeds globular, 2 x 2 mm., the surface densely covered with very minute circular maculæ. East shore of Cozumel Island, near the northeast point (1600), and the north and south shores of Cayman Brac (1185, 1232); not found elsewhere on the coasts.

Euphorbia trichotoma macilenta var. nov.

Similar to the species, but of open, scraggy growth. Leaves thicker, appearing like those of E. buxifolia; serration finer and less evident. Seeds triangulo-globular 1.9 x 1.8 mm., nearly smooth on all facets. Cape Corientes, Cuba, rare (1447, 1463); east shore Cozumel Island, rare (1598).

Euphorbia Peplus Linn., Sp. 658.

Three forms of this species exist on the Bermudas, the one branching and leafy from the base (Hamilton, 135); another with a nude main stem 6-8 in. long and with the umbellate branches nude below and small-leaved above (Walsingham, 73), and the third a low form with lower leaves in part orbicular broad, and shorter petioled than in

the true form of the species (*E. Peplus maritima* Boiss. in de C. Prod. XV:141 ?), and with the dorsal facets of the seeds mostly 3 but often abortively 4-pitted (Pagets, 1). Immigrants from Europe.

PEDILANTHUS TITHYMALOIDES (L.) Poit. An. Mus. Par. 19:t. 390.
Euphorbia Linn. Hedgerows about an old cottage at Cataño, Porto Rico (157); probably introduced at this place.

PEDILANTHUS NODIFLORUS Millsp. Field Col. Mus. Bot. 1:305.
Rocky plain south of the lagoon near Progreso, Yucatan (1667).

ANACARDIACEÆ.

COMOCLADIA ILICIFOLIA Sw. Prod. Veg. Ind. Occ. 17.
On rock-strewn hillside near the sea on south shore of Culebras Island (588). Strictly erect, tree-like, ends of branches only in leaf.

ANACARDIUM OCCIDENTALE Linn. Sp. Pl. 1:383.
Fence rows bordering estates in the suburbs of San Domingo (798,818). Leaves broadly ovate, notched at the apex, flower clusters large.

CELASTRACEÆ.

ELÆODENDRON XYLOCARPUM (Vent.) de C. Prod. 2:11.
Cassine xylocarpa Vent. Rocky seashore about the bay at Charlotte Amalia, St. Thomas (525), where it is known as the "Spoon-tree."

SAPINDACEÆ.

SERJANIA LUCIDA Schum. Skriv. Nat. Selsk. Kjœb. 3:128.
Mountain woods back of Charlotte Amalia, St. Thomas (531, 535), where it is called "White Vis."

SERJANIA POLYPHYLLA Poir. ex Stend. Nom. ed. 2, 2:568.
Over shrubs on the seashore dunes at Santurce, Porto Rico (263).

PAULLINIA FUSCESCENS GLABRESCENS Radlk. Abh. K. Bayer. Acad. 283.
Climbing the higher shrubbery, center of the Island, Cozumel (1559).

CARDIOSPERMUM HELICACABUM Linn. Sp. Pl. 366.
Spreading over low shrubbery at Walsingham, Bermuda (91); at Guanica, Porto Rico (764); near Charlotte Amalia, St. Thomas (500); Southwest Point, Cayman Brac (1200), and at Spot Bay, Grand Cayman (1309).

CARDIOSPERMUM MICROCARPUM Kth. Nov. Gen. et Sp. 4:104.
At The Creek (1165) and Southwest Point (1201), Cayman Brac, where it is called "Wire-withe."

SAPINDUS SAPONARIA INÆQUALIS (de C.) Radlk. Field Col. Mus. Bot. 1:402.
Open woodlands about San Miguel, Cozumel (1471).

Cupania Americana Linn. Sp. Pl. 200.

Large umbrageous tree, 40 feet high, left standing in a clearing near San Domingo city (827).

Dodonæa angustifolia Blanco Fl. Philip. 1:312.

At Pagets (67), and Walsingham (85), Bermuda. Leaves 7.5 x 1 cm., fruit 4-winged, wings 4.5 mm. broad at the apex, 3.8 mm. at the sides.

Dodonæa viscosa Jacq. Enum. Pl. Carib. 19.

Sandy sea-beach north of Georgetown, Grand Cayman (264). Leaves oblanceolate pointed 10.5 x 3.3 cm., fruits orbicular-oval 2.3 x 2 cm., wings 6 mm. broad above, 5 mm. elsewhere.

RHAMNACEÆ.

Colubrina Colubrina (Jacq.). *Comb. nov.*

C. ferruginosa Brongn. Am Sc. Nat. 10:369. Plentiful along the sea beach, second line of vegetation. The Creek, Cayman Brac (1150), where it is called "Black Velvet" and is used in infusion in lieu of tea, and along the south shore of the island (1230); shores north of Georgetown, Grand Cayman (1256).

Ceanothus reclinatus L'Her. Stert. Angl. 6.

Colubrina reclinata Brongn. *Rhamnus ellipticus* Sw. Rocky shores at Cape Corientes, Cuba (1450). Leaves 11-13 x 5.5-7 cm., slightly pubescent beneath, young branches transiently rusty-tomentose.

VITACEÆ.

Cissus sicyoides Linn. Syst. ed. x. 897.

Two widely differing forms of this species were collected: the first with ovate-cordate blunt, shining, coriaceous leaves 9 x 9 cm., the margin remotely toothed and the internodes 5.5 cm., at Cataño, Porto Rico (186); the other with oblong-lanceolate, pointed, long-toothed leaves 4-6 x 2 cm., and short internodes (*C. smilacina* Kth. ?) from the center of the Island of Cozumel (1558).

TILIACEÆ.

Triumfetta semitriloba Jacq. Enum. Pl. Carib. 22.

Pagets and Walsingham, Bermuda (46, 94). Leaves all nearly orbicular 7.5 x 7 cm., with a tendency to trilobation at the upper fourth, apical lobe pointed. Outskirts of Charlotte Amalia, St. Thomas (417); lower leaves 8.5 x 7 cm., semitrilobate, the lateral lobes rounded, upper and median leaves lanceolate 5.5 x 2.5 cm. Suburbs of San Domingo (849), similar to the last. Another from like locality (806) has the lower leaves small, 3.5 x 2.5 cm., fully trilobate, densely stellate beneath, the upper leaves larger, 5.5 x 4.5 cm., semilobate, and the long (17 cm.) panicles racemose and nearly aphyllous. Specimens from Caguas, Porto Rico (199), and Port Antonio, Jamaica (888), show little tendency in the leaves to trilobation: lower leaves ovate-

lanceolate, 10.5 x 6 cm., the upper lanceolate 6 x 2 cm.; upper portion of plant densely leafy. Specimens from Morro Hill, Santiago de Cuba (1060), are similar to those from Bermuda, but are more densely stellate-pubescent, and the leaves round-semitrilobed, 7.5 x 6 cm. Fields about Spot Bay, Grand Cayman (1297), very leafy, the lower leaves barely trilobate, 5 x 4 cm., the upper spatulate-lanceolate, 3 x 1 cm. Specimens from Caguas, Porto Rico (235), have all the leaves heavily stellate-pubescent, and the lower 5-lobed, the basal lobes rounded, the others pointed, serration double.

CORCHORUS SILIQUOSUS Linn. Sp. Pl. 529.

Bodden Bay road, Grand Cayman (1344). Leaves all ovate-lanceolate, acuminate, the largest 3 x 1.6 cm. Hillsides at Bayamon, Porto Rico (345), and Pedernales Point, Isle of Pines (1433); leaves all small, 1.5 x .7 cm., tending to narrow at the base; a profusely fruiting form. The Caleta, Cozumel (1529), stem simple, leaves large, 6.5 x 3.5 cm. Fruits in all three forms the same, long cylindrical and straight or falcate, 5 x .3 cm.

CORCHORUS HIRSUTUS Linn. Sp. Pl. 530.

Dunes of the coast at Santurce (290) and Port of Poncé (680, 681), Porto Rico, and at Cape Corientes, Cuba (1460); leaves elongate-ovate, 5 x 3 cm., fruiting pedicels 4, fruits 1.5 x .5 cm., strongly semilunar. Hillsides at The Ovens, Santiago de Cuba (1112); leaves all small, 2.2 x 1.7 cm., ovate papillate-dentate, fruiting pedicels 6.

MALVACEÆ.

ABUTILON CRISPUM (Linn.) Medic. Malv. 29.

Sida crispa Linn. Dry slopes of Morro Hill, Santiago de Cuba (1083).

ABUTILON INCANUM Sweet Hort. Brit. 1:53.

Dry roadside at "The Ovens," Santiago de Cuba (1124).

ABUTILON PAUCIFLORUM St. Hil. Fl. Bras. Mer. 1:206.

A. pedunculare Griseb. Pasture lands and dry stream beds near Guanica, Porto Rico (722).

ABUTILON PERMOLLIS (Willd.) Sweet *loc. cit.*

Sida permollis Willd. Dry field of scrub at Pedernales Point, Isle of Pines (1431), and Bodden Bay road, Grand Cayman (1799).

Abutilon Cubanum sp. nov.

Shrubby, thick stemmed, finely and closely stellate-pubescent, leaves ovate-lanceolate, cordate, acute serrate, velvety on both sides with comparatively large stellate hairs, petioles about one-quarter the length of the leaves not reduced above; inflorescence apical in few flowered axillary clusters, peduncles slightly jointed above the middle, much shorter than the leaf; calyx five-fid to the middle; lobes ovate, long pointed; petals canary-yellow, exceeding the calyx; carpids about 15; seeds minutely puberulent.

Differs from A. crispum G. Don in its heavier growth, less heart-

shaped serrate leaves, less dense pubescence, clustered inflorescence, short peduncles, and yellow petals.

Dry slopes of San Juan Hill, Santiago de Cuba (1051). Type in Field Col. Mus. Herb. No. 61051.

Wissadula divergens (Benth.) Benth.

Sida divergens Benth. Voy. Sulph. 69. Along Bodden Bay road, Grand Cayman (1346, 1350).

Wissadula micronulata A. Gray. Mex. Bound. 39.

Abutilon A. Gr. Proc. Am. Acad. 5:175. Waste ground near San Domingo city (829). Dry roadside near "The Ovens," Santiago de Cuba (1105).

Malva rotundifolia Linn. Sp. Pl. 688.

Common but not plentiful about the Bermuda Islands, Walsingham roadsides and gardens (111).

Malvastrum Coromandelianum (Linn.) Garcke in Schw. Fl. Aeth. 267.

Malva Coromandeliana Linn. *Malvastrum tricuspidatum* A. Gr. South shores of Culebras Island (611).

Malvastrum spicatum (Linn.) A. Gr. Bot. U. S. Expl. Exp. 147.

Malva spicata Linn. Old pastures at Guanica, Porto Rico (718, 721); slopes of Morro Hill, Santiago de Cuba (1085), and at "The Creek," Cayman Brac (1167, 1188), where it is called "Broom-weed," and is used in decoction as a remedy for quinsy.

Sida, Sp.

A form quite common in dry fields on the south shore of Culebras Island (643) and in the street of the settlement.

Sida carpinifolia Linn. f. Suppl. 307.

Dry soils Port Antonio, Jamaica (1138); at The Caleta, Cozumel (1536), and at Progreso, Yucatan (1654).

Sida carpinifolia acuta (Burm.) *comb. nov.*

Sida acuta Burm. f. Flor. Ind. 147. *S. stipulata* Cav. *S. carpinifolia β brevicuspidata* in Griseb. Fl. Br. W. I. 73. ref. Wright's 1565 Cuba Or. *visa* in Herb. Cantab. This is the usual form in the West Indies. It is less branching than the others and has larger paler flowers and clean cut similar leaves (ovate lanceolate 4-5 x 2.5-3 cm.) throughout. Dry soils at Cataño (145), Caguas (248), Bayamon (346), and Santurce (294), Porto Rico. Environs of Charlotte Amalia, St. Thomas (389, 404), and at San Miguel, Cozumel (1491).

Sida carpinifolia Balbisiana (de C.) *comb. nov.*

Sida Balbisiana de C. Prod. 1:460. A small leaved form with stellate pubescence and tall straggly growth, found on waste grounds at San Domingo city (880).

Sida carpinifolia Antillana *nom. nov.*

S. Jamaicensis Vell. *non.* Linn. Leaves ovate serrate, densely

stellate pubescent, serratures large obtuse, pedicels axillary, 1-flowered carpells 5, bicornuate. Agrees well with Palmer's 581 Acapulco, Mex. Dry places near Spot Bay, Grand Cayman (1303).

Sida carpinifolia spiræifolia (Link) *comb. nov.*

Sida spiræifolia Link Enum. 2:205. Low spreading plant with thick terete glabrous branches densely vari-leaved; leaves glabrous or nearly so, flower single, axillary, short pedicilate, calyx finely stellate-pubescent, stellæ scattered. Roadways near Charlotte Amalia, St. Thomas (497), and about Port Antonio, Jamaica (960, 989).

SIDA ACUMINATA de C. Prod. 1:462.

S. maculata Bert. *non* Cav. Dry fields south shore of Culebras Island (576, 578), and at Guanica (697), Porto Rico.

SIDA CILIARIS Linn. Syst. ed. x:1145.

Waste grounds in the environs of San Domingo city (795).

SIDA CORDIFOLIA Linn. Sp. Pl. 684.

Sandy banks and waste grounds near Santurce (292), and Guanica (720), Porto Rico. Near Charlotte Amalia, St. Thomas (470). Environs of San Domingo city (794, 870, 882), and at El Caney, Santiago de Cuba (1038, 1039).

SIDA GLOMERATA Cav. Diss. 1:18.

Dunes along the sea at Santurce, Porto Rico (297).

SIDA RHOMBIFOLIA Linn. Sp. Pl. 684.

Old fields and pastures near Bayamon, Porto Rico (325), and Charlotte Amalia, St. Thomas (509).

SIDA SPINOSA Linn. Sp. Pl. 683.

Roadsides and barrens at Paget's, Bermuda (61); Guanica, Porto Rico (708); San Domingo city (821), and San Juan Hill, Santiago de Cuba (1053).

SIDA SUPINA L'Her. Stirp. Nov. 109 bis.

Dry hillsides above the city of Charlotte Amalia, St. Thomas (394).

SIDA URENS Linn. Syst. ed. x:1145.

Coco grove environs west of San Domingo city (832), and near Spot Bay, Grand Cayman (1284).

BASTARDIA VISCOSA (L.) H. B. K. Nov. Gen. et Sp. 5:256.

Old pasture lands near Guanica, Porto Rico (756), and hillsides near Charlotte Amalia, St. Thomas (471).

ANODA HASTATA Cav. Diss. 1:39.

Over the shrubbery of hedgerows in the environs of San Domingo city (861).

MALACHRA CAPITATA Linn. Syst. ed. xii:458.

In this species the stem is either simply tomentose or has in addition many aciculæ, the petioles are not geniculate, and the carpids are glabrous.

South shores Culebras Island (566), plentiful. Waste grounds near San Domingo city (789).

Malachra alceæfolia Jacq. Coll. 2:350.

In this species the stem is somewhat oppressed pilose and the *aciculæ* are *geminate*, the petioles are so strongly geniculate near the leaf that the truncate base lies parallel to the petiole, carpids puberulous. *M. capitata var β alceifolia* (Jacq.) Griseb. in Fl. Br. W. I. 80 *M. rotundifolia* Schk.

Old pastures at Caguas (212), and Santurce (275), Porto Rico.

Urena lobata Linn. Sp. Pl. 692.

Old pastures at Caguas, Porto Rico (237), and south shore of Culebras Island (594). Mountain road above Charlotte Amalia, St. Thomas (545); leaves ample 6.5 x 9 cm., broadly ovate or nearly reniform but with a truncate base, 3 or abortively 5-lobed, sparsely short-hairy above, densely tomentose beneath, slit glands 3. Fruit, 1.5 cm. diameter.

Urena sinuata Linn. *loc. cit.*

Fields about San Domingo (796); lowest leaves unlobed and large serrate, median leaves partially 5-sinuate-lobed, upper sinuately 3-lobed above the middle, longitudinally slit gland one, at the base of the midrib, fruit nearly 1 cm. diameter. Same locality (847), juvenile. Bodden Bay road, Grand Cayman (1321), all the leaves 5-lobed, split glands 3, leaves 4.5 x 5.5 cm., fruits undeveloped. The number of split glands in this genus appear to be in the ratio –2 of the lobes of the leaf bearing them.

Pavonia Typhalæa Cav. Diss. 3:134.

Moist rich soil near Port Antonio, Jamaica (961, 1139).

Pavonia spinifex (Linn.) Cav. *loc. cit.* 133.

Hibiscus Linn. Dry soils in opens near Cataño (259), and Guanica (688, 695, 703), Porto Rico.

Malvaviscus Malvaviscus (Linn.) comb. nov.

Hibiscus M. Linn. Sp. Pl. 694, *M. arboreus* Cav. Diss. 3 t. 48. Spot Bay, Grand Cayman (1313), and scrub land south of Progreso, Yucatan (1728). "The Creek," Cayman Brac, where it is termed "Mahœ," and used as a flagellant for rheumatic patients.

Malvaviscus concinnus H. B. K. Nov. Gen. et Sp. 5:286.

Dry gravelly roadway cut west of Port Antonio, Jamaica (931).

Malvaviscus Jordan-Mottii sp. nov.

Tall shrub, 2-3 meters high, glabrous throughout, branches and branchlets red, leaves almost peltoid-cordate, broadly ovate, bluntly pointed, 9.5-10.5 x 8-8.5 cm., irregularly blunt-crenate toothed, major veins 7, strongly reticulate; inflorescence terminal-axillary on the young branchlets pedicels about 2 cm. long, slender; involucel-leaves 10 linear, somewhat longer than the calyx, calyx lobes deltoid, finely scattered hairy, corolla finely ciliate, rosy, about half the length

of the column, which is unilaterally staminate. Berry bright red, 1 cm. diameter, 5-keeled.

High tableland above Spot Bay, Cayman Brac (1166), where it is called "Mahoe," and was considered by my guide to be exceedingly nettle-like in character, he warning me repeatedly to avoid touching the leaves. In order to convince him that he was mistaking the plant for another (Malvaviscus Malvaviscus (L.), I whipped my perspiring neck and hands repeatedly without effect; still unconvinced, he remarked that the plant was used as a flagellant in rheumatism. Named to commemorate a delightful companion of the voyage, Mr. Jordan L. Mott, Jr., of New York. Type in Herb. Field Col. Mus. Cat. No. 61166.

HIBISCUS TUBIFLORUS Mocq. & Sesse. de C. Prod. 1:447.

Dry slopes of Morro Hill, Santiago de Cuba (1071); open, dry woodlands at Chan Donot and Chichen Itza, Yucatan (1632). Hairs radiately 3-acicular on both surfaces of the leaves.

HIBISCUS ROSA-SINENSIS Linn. Sp. Pl. 694.

Deep woods on the mountain road above Charlotte Amalia, St. Thomas (370).

HIBISCUS TILIACEUS Linn. Sp. Pl. 694.

One shrub not in flower noted on Culebras Island, south shore. Shores of Santiago Bay, Cuba, and at Pedernales Point, Isle of Pines. Shore north of Georgetown, Grand Cayman (1238). Leaves 12.5 x 9.5 cm., strongly cordate, not cuspidate, glabrous on both surfaces, entire; fruit globular, flattened above, 1.8 cm. diameter.

ABELMOSCHUS ESCULENTUS (L.) Moen. Meth. 617.

Hibiscus Linn. Escaped to the base of the fort at El Caney, Santiago de Cuba (1032), called by the natives "GOMBO."

Cienfuegosia Yucatanensis sp. nov.

An ascending lax perennial, virgately branching from the base, leaves glabrous linear or linear-lanceolate 2.5-5 x .7-.4 cm. entire, 3-veined, blunt, petiole one-fourth the length of the lamina; inflorescence axillary, peduncles long (4-5.5 cm.), very slightly swollen at the summit, involucre indeterminate except in its 5-9 irregular minute awl-shaped bracts, which appear to be in decadence; calyx 5-parted into slender lanceolate lobes which are reticulately 3-veined, each vein flanked by irregular rows of large black punctæ; petals 1.7-2 cm. long, yellow throughout. Style 6 mm. long, traversed longitudinally by three rows of hairs, *stigma capitate entire*, capsule 3-celled, seeds invested with a dense ferrugineous wool.

Arid, stony soil about 6 kilometers south of Progreso, Yucatan (1693). Near C. heterophylla (Vent.) Garcke, from which it differs in its habit, longer peduncles, absence of purple at the base of the petals, and capitate stigma, as well as its leaves, and larger flowers. Type in Herb. Field Col. Mus. Cat. No. 61693.

GOSSYPIUM BARBADENSE Linn. Sp. Pl. 693.

South shore of Culebras Island (628), Porto Rico. Old fields,

suburbs of Charlotte Amalia, St. Thomas (369). Flowers yellow, leaves trilobate or abortively approaching trilobation, 10 x 8 cm., the central lobe prolonged into a slender lanceolate apex, concluding with a long awn-like point, all the larger veins beneath glandular dotted, and each parenchymal island formed by the anastomosis of the veinlets centrally occupied by a small black punctation; branchlets and petals also nigro-punctate; all parts of plant absolutely glabrous.

Center of Island Grand Cayman, scattered about in old fields, pastures and open woodlands (1367). Leaves small, broader than long, 5 x 6.5 cm., trilobed at the upper third, lobes deltoid, blunt and aristate, even the smallest leaves (1.5 x 1 cm.) homomorphous; stems, branches, branchlets and petioles long pilose; black punctate throughout, punctations turgid upon the upper surface of the leaves, forming a mass of shining hemispheres.

Roadsides and fields about Progreso, Yucatan, and the dry, rocky scrubland south of the lagoon (1690, 1734). Leaves cordate, 6 x 6 cm., or hederaceously 3-lobed, 5 x 6 cm., lobes deltoid, pointletted, nigro-punctations as in the first form. Whole plant short-pilose.

BOMBACACEÆ.

Pachira fastuosa (Sesse.) Decne. Fl. Serres. 23:48.

Roadside near El Caney, Santiago de Cuba (1025). Probably cultivated, tree nude at this season except for a few bright, rose-colored flowers.

STERCULIACEÆ.

Melochia tomentosa Linn. Syst. ed. x:1140.

M. frutescens Jacq. Dry fields south shore of Culebras Island (572, 609, 616, 645), and about the bay of Guanica (765), Porto Rico. Old fields near Charlotte Amalia, St. Thomas (472), where it is called "Broom-weed," and the bay of Santiago de Cuba (1020, 1023). Arid stony scrublands south of Progreso, Yucatan (1689). The Creek, Cayman Brac (1184); leaves ovate-lanceolate, softly tomentose above and beneath, 4 x 1.7 cm., obtuse serrate, sharply serrate, doubly serrate, crenate and recurrent-serrate on the same branch. A similar plant from Spot Bay (1288) and from Bodden Bay road (1326), Grand Cayman.

Melochia pyramidata Linn. Sp. Pl. 674.

Fencerows and fields suburbs of San Domingo (787, 838); leaves sharply crenate-serrate, ovate-lanceolate, 4.5 x 2 cm., veins prominent below, light yellow. Morro Hill, Santiago de Cuba (1087); a form with small ovate leaves below, 1.3 x 1.5 cm., and the usual form above, 2.5 x 1.6 cm. Bodden Bay road, Grand Cayman (1345) a form with long slender virgate branches, and narrowly-lanceolate sharp serrate leaves, 5 x 1.5 cm.

Melochia nodiflora Sw. Prod. Veg. Ind. Occ. 37.

Grassy roadsides near San Domingo City (848).

WALTHERIA INDICA Linn. Sp. Pl. 673.

Dry fields near Cataño, Porto Rico (171), dry hillsides about Charlotte Amalia, St. Thomas (381, 479) the form with apparently long peduncled flower clusters (*W. Americana* L.), which are really seminude branchlets. Outskirts of San Domingo (793, 797) leaves 5 x 2.5 cm., rounded at the apex. Morrow Hill, Santiago de Cuba (1057, 1073, 1075). Bodden Bay road, Grand Cayman (1325, 1327, 1336) the first is the usual branching form, the second is densely leafy, the third simple-stemmed and small (2 x .8 cm.) leaved. Center of Island Grand Cayman (1382). Rocky scrubland south of the lagoon at Progreso, Yucatan (1705). Plentiful at The Ovens, Santiago (1118), and a low form at Cape Corientes (1461), Cuba.

Guazuma Guazuma (Linn.) Comb. nov.

Theobroma Guazuma Linn. *G. ulmifolia* Lam. Roadsides and woodlands beyond San Domingo (786); tree 7 meters high, leaves strongly oblique at the base, 9.5 x 5 cm., fruit 1.6 cm. diameter. Road through the "Ovens," Santiago de Cuba (1114), a small tree, leaves 9.5 x 4 cm., more strongly ovate-lanceolate than in the last; fruits 1.8 cm. diameter. Woodlands throughout Cozumel (1470) counterparts of the first form.

HELICTERES JAMAICENSIS Jacq. Select. Am. 235.

Shores of the bay at Guanica, Porto Rico (755); Whitewater Bay, St. Thomas (558), leaves very large, 18 x 10 cm., the lowest often partially abortive-lobed, acuminate, fruit large (5.2 x 1.8 cm.) and downy, apices of the twisted carpids pointed and prominently projecting. The Creek, Cayman Brac (1183), leaves perfect, broadly ovate-lanceolate, 9.5 x 6 cm.; fruit 3 x 1.5 cm., blunt at the tip, *i. e.*, carpid apices close, not projecting.

HELICTERES BARUENSIS Jacq. Enum. Pl. Carib. 30.

Center of Island Grand Cayman (1370), leaves ovate pointed, 9 x 6.5 cm., characteristically olivaceous and smooth above, white-green and densely pubescent beneath. Fruit rusty brown, 4 x 1.5 cm., blunt at the apex.

GUTTIFERACEÆ.

CLUSIA FLAVA Jacq. Enum. Pl. Carib. 34.

Open woodlands center of Grand Cayman (1379). Tree 10 meters, leaf venation fairly conspicuous beneath.

COCHLOSPERMACEÆ.

MAXMILIANA HIBISCOIDES (Kunth.) Kuntze. Rev. Gen. 44.

Cochlospermum hibiscoides Kth. Syn. Pl. Æq. 3:314. Woodlands about Chan Yonot and Chichen Itza, Yucatan (1618).

TURNERACEÆ.

TURNERA ULMIFOLIA Linn. Sp. Pl. 271.

Hillsides and streets about Port Antonio, Jamaica (963, 997); an

exuberant growth, with the large-toothed leaves, 8-10.5 x 3.5-4.5 cm. Fields and ditches about Charlotte Amalia, St. Thomas (456, 526), Port Antonio, Jamaica (889), and Georgetown, Grand Cayman (1260), the usual form with more lanceolate leaves, 7-9 x 2.2-3.2 cm. Dunes of the coast in coco groves Santurce, Porto Rico (296), waste grounds environs San Domingo city (853, 856), and at Morro Hill, Santiago de Cuba (1088), a small-leaved form, 3-5 x 1.5-2 cm., downy pubescent beneath. Bay shores at Santiago de Cuba (1024). a divaricately branching form with small narrowly-lanceolate bicolor leaves, 2.3-3 x .8-1.1 cm.

Turnera scabra sp. nov.

Low spreading from a short rootstock, stems rusty-tomentose, leaves broadly ovate, 3-3.5 x 2-2.5 cm., rusty-hairy beneath, scabrous above, coarsely and sharply serrate, short-petiolate with two small crateriform glands at the summit buried in the rusty tomentum; flowers large, chrome, sessile, bracts aristate nearly twice the length of the calyx tube, calyx lobes 5, chartaceous, lanceolate-apiculate, about one-half the length of the large oblong petals. Fruit unknown. On sandy spots in dry fields among the foot hills at Bayamon, Porto Rico (323). Type in Herb. Field Col. Mus. Cat. No. 60323. Species prox T. ulmifolia L.

Turnera triglandulosa sp. nov.

An erect purple-stemmed glabrous shrub, 1-2 meters high, with long virgate wide-spreading branches, and linear-lanceolate leaves. Leaves 9-12 cm. long, 1-1.2 cm. broad, narrowed at both ends, distantly notched along the margin (not serrate), pale beneath, olivaceous above, the midvein slightly hairy, petiole 1-1.4 cm. long, mostly triglandular; 2-quoit shaped, opposite at the summit, 1-lozenge shaped about midway of the upper surface. Pedicels short petiolar, bracteoles lanceolate entire throughout, nearly twice the length of the calyx tube, calyx lobes lanceolate attenuate about the length of the deep yellow corolla. Capsule ovoid, punctate, slightly hairy, seeds elongated-pyriform (lachrymate), slightly curved, the surface marked by sixteen longitudinal rows of minute rectangular pits; aril ovate-lanceolate, apiculate, one-quarter longer than the seed.

Coco groves and waste grounds at "The Creek," Cayman Brac (1152), where it is known as "Cat-bush," and where the leaves are used in laundrying linen in lieu of soap; southwest point of the island in the same situation (1195, 1209). Type in Herb. Field Col. Mus. Cat. No. 61152.

PASSIFLORACEÆ.

Passiflora minima Linn. Sp. Pl. 950.

Pagets, Bermuda (44). Distinguished from the next species to which it is referred by authors, by its longer petioles hairy in lines, the smaller and seldom trilobed leaves tending to a blunt apex, stipitate attenuate petiolar glands, and smaller general habit. Leaves ovate 3-4 x 1.4-1.7 cm., subentire or entire, petioles .5-.7 cm.

PASSIFLORA SUBEROSA Linn. Sp. Pl. 958.

Cape Corientes, Cuba (1453). Leaves coriaceous, broadly ovate in outline, 4.5-6 x 5-6 cm., trilobate, pointleted-acute at the apex, petioles glabrous, .6 cm., glands subsessile opposite, close to the blade.

PASSIFLORA LINEARILOBA J. Hook Trans. Linn. Soc. 20:222.

Suburbs of San Domingo city (831, 854). Leaves mostly linear lobed, the lateral lobes divergent, all hairy, petiolar glands at the upper third, alternate, flowers larger than the last.

PASSIFLORA FOETIDA Linn. Sp. Pl. 959.

P. ciliata Dryand. Shores of the bay (1003), and on Morro Hill (1065), Santiago de Cuba.

CACTACEÆ.*

OPUNTIA TUNA (Linn) Mill. Dict. ed. viii:3.

Cactus Linn. South shore of Culebras Island (648). East shore of Cozumel Island; and two low spreading clumps near the center of the north end Perez Island, Alacran Shoals (1757).

RHIZOPHORACEÆ.

RHIZOPHORA MANGLE Linn. Sp. Pl. 443.

Forming "islands" and "swamp groves" throughout the regions visited except the Bermudas and Alacran Shoals. All along the inner bay shores and forming swamps at Cataño, Porto Rico (363), where it seldom attains a growth of over ten feet in height. Southwest point Cayman Brac (1211).

COMBRETACEÆ.

BUCERAS CATAPPA (Linn.) Hitch. Pl. Baham. 85.

Terminalia L. The most striking tree of the streets of Georgetown, Grand Cayman (1316), where it is planted for shade and incidentally for its fruit, called the "Almond," to which it bears some likeness in both shape and taste. Also noted near San Miguel, Cozumel.

CONOCARPUS ERECTUS Linn. Sp. Pl. 147.

In this species the leaves vary from broadly lanceolate to elliptical lanceolate, from glabrous to sericeous, and are not only biglandular at the base, but also uniglandular at the juncture of each main vein to the midrib; this character is evident also in all the forms and varieties. The peduncles of the flower heads may be from one to four times the diameter of the head or sessile. Stamens usually 5, oftener less than more. The whole plant is erect and varies from a small shrub to a fair-sized tree. South shores Culebras Island, Porto Rico (596, 649). Shores of the bay of Santiago, Cuba,

*Although many cacti were observed, especially on the south shore of Culebras Island, at Santiago de Cuba, on the Cayman Islands, the Island of Cozumel, and in the arid scrubland south of Progreso, the above was the only species found in bloom.

leaves lanceolate acuminate, 8 x 2.5 cm., light green, glabrous (except the juvenile), flower heads sessile, a large shrub (1012). Shores of Spot Bay, Grand Cayman, resembling the last, but with smaller leaves (5.5 x 2 cm.), and peduncles from .5 to 2 cm. long. A fair size shrub, 1.5 to 2.5 meters (1306); specimens from Pedernales Point, Isle of Pines (1428), are counterparts of this form. Three individuals of this species were found upon the south shore of Perez Island, Alacran Shoals, the largest of which I cut down for the woody portion. In these the leaves are small (4.3 x 1.5 cm.), and the head short peduncled. Low shrubs (1 to 2 meters) established at this habitat 19 years according to the woody rings of the largest (1755). [Specimens in this Herbarium from Socorro Island, off Lower California (*Anthony*, 397), have leaves 8 x 2.4 cm., and peduncles (in fruit) of the length of the cones; from Acapulco, Mexico (*Palmer*, 137), leaves 9.5 x 2.5 cm., peduncles one-third the length of the fruiting cones; from Biscayne Bay, Florida (*Palmer*, 159), leaves 5.5 x 1.4, peduncles 1.3 times the length of the heads: and from Indian River, Florida, (*A. H. Curtiss*) with leaves elliptical-acuminate, 6 x 2.7 cm., and peduncles of the length of the flowering heads.]

Conocarpus erectus arboreus Griseb. Fl. Br. W. I. 277.

In this form the leaves are more broadly lanceolate, more inclined to be sericeous, obscurely petiolate, whole plant arboreous. Tree 9 meters, very abundant at the port of Silam (642 *Gaumer*), leaves 10.5 x 3 cm., peduncles about one-half the length of the ovate flower heads.

Conocarpus erectus sericeus (Forst.) Griseb. Fl. Br. W. I. 277.

C. sericea Forst. An erect shrub with broadly lanceolate leaves covered with a light but persistent silky down, and with fruits twice the size of the species. Shores of the east coast of Cozumel, shrub 3 meters, leaves downy, 8.5 x 3.3 cm., fruits globular 1.5 cm. diam. sessile (1582). [Shrub 5 meters, coast of Yucatan at Progreso, like the last but with smaller leaves (6 x 2.5 cm.). Collected by Gaumer, 1164; and by Dr. Arthur Schott 264, 266.]

Conocarpus erectus procumbens (Linn.) Jacq. Am. Pict. 260, f. 22.

C. procumbens Linn. A prostrate trailing shrub bearing but little resemblance, in the field, to the species, even when growing together as is often the case: the stem trails along the surface of the ground and the flowering branchlets become erect as they are produced. The leaves are thicker than in the species, ovate, and mucronate, the fruit large and sessile, and the stamens usually 2. Islets in Hamilton Bay, Bermuda, leaves 4.7 x 2.2 cm., sharply mucronate, fruits 1 cm. diameter (11); shores at San Miguel, Cozumel, leaves 5 x 2.6 cm., sharply mucronate, (1472); shores of the lagoon south of Progreso, Yucatan, like the last but less mature (1717, 1720).

Conocarpus erectus argenteus var. nov.

A striking tomentose variety of the prostrate form, with broadly ovate acute densely silvery-villous leaves and sessile fruits. Southwest Point, Cayman Brac, leaves 8 x 4.7 cm. (1212); east shore of

Cozumel, leaves 6 x 3.5 cm. (1583), a beautiful and attractive object along the shore at rare intervals.

MYRTACEÆ.

PSIDIUM GUAJAVA Linn. Sp. Pl. 470.

Introduced into Grand Cayman from Jamaica, it has now run wild, as a shrub, throughout the fields and open woods of the central portion and become a veritable pest (1378). Leaves elliptical, 8 x 2.7 cm., bluntish, the midrib projecting as a curved point, veins very prominent beneath, the midrib very slightly puberulous.

Jambosa Jambos (L.) comb. nov.

Eugenia Jambos Linn. Sp. Pl. 470. Specimens from deep woods on the mountain heights above Charlotte Amalia (511) and mountain sides near Port Antonio, Jamaica (1149). A large tree with glabrous branchlets and lanceolate-acuminate pointed leaves 19 x 4 cm., narrowed at the base to the short (1 cm.) petiole, the veins quite prominent beneath; peduncles terminal 5-flowered, the flowers white or creamy, and large (8 cm. diameter), sepals brownish punctate.

EUGENIA BARUENSIS Jacq. Coll. 3:183.

Plentiful in scrublands upon the table land above "The Creek," Cayman Brac (1157) where it is called "Strawberry bush." It yields at this season a large quantity of pleasant tasting though somewhat astringent and terebinthine edible berries, about the size of black cherries.

EUGENIA MONTICOLA (Sw.) de C. Prod. 3:275.

Myrtus Sw. Dry fields at Walsingham, Bermuda (96).

Chytraculia Chytraculia (L.) comb. nov.

Myrtus Chytraculia Linn. *Calyptranthes Chytraculia* Sw. At the Caleta, Island of Cozumel (1537). Our specimens agree with Wright No. 172 Cuba. A low glabrous-branched tree, leaves 7-9 x 3.5-4 cm.

MELASTOMACEÆ.

CLIDEMIA HIRTA (Linn.) Don. Mem. Wern. Soc. 4:309.

Melastoma hirta Linn. Hedgerows and partial opens about Port Antonio, Jamaica (1144).

MICONIA PRASINA (Sw.) de C. Prod. 3:188.

Melastoma prasinum Sw. Fencerows and hillsides above Charlotte Amalia, St. Thomas (517). Leaves 10-16 x 4.5-5.5 cm., perfectly smooth and glossy above, slightly rusty-downy on the midribs beneath, margin minutely crenate with now and then one or more of the veinlets, leading to the convexity of the crenations, projecting as a cusp, petioles 2-3 cm. long, those of the young leaves rusty-downy.

MICONIA TRINERVIS (Sw.) Griseb. Fl. Br. W. I. 257.

Melastoma trinervium Sw. Roadsides and hedges near Caguas, Porto Rico (238). The specimens have a ferruginous tomentosity on

the tips of the young branchlets, terminal petioles, and inflorescence, as well as on the larger veins beneath.

ONAGRACEÆ.

Jussieua Peruviana Linn. Sp. Pl. 388.

Oenothera hirta Linn. Syst. ed. x. 998. *Jussieua hirta* (L.) Vahl. Rich soil near the shore east of Port Antonio, Jamaica (934).

Jussieua linifolia Vahl. Ec. Am. 2:32.

J. acuminata Sw., *J. parviflora* Salzm. and Mich., *J. micrantha* Kuntze, *J. nubica* Hochst, Port Antonio, Jamaica (967), also found here by Fawcett, but not by Hitchcock. Although seven species of this genus are found in Jamaica, none seems so far to have reached the Caymans.

Jussieua octovalvis (Jacq.) Sw. Obs. Bot. 142.

Oenothera octovalvis Jacq. Enum. Pl. Carib., 19., *J. salicifolia* Kth., *J. angustifolia* Lam. In the Index Kewensis this species is included under the next, from which, however, my Jamaican forms are plainly distinct, the leaves being longer, far narrower and sharper pointed, the calyx lobes lanceolate, the fruits much larger, longer, and not subtended by the two awl-shaped bracts at the apex of the pedicel. Port Antonio, Jamaica (926).

Jussieua suffruticosa Linn. Sp. Pl. 388.

Grassy fields Port Antonio, Jamaica (996, 1791), at Bayamon (349) and Caguas (228), Porto Rico.

UMBELLIFERACEÆ.

Hydrocotyle Yucatanensis sp. nov.

Glabrous radicant, leaves peltate in the middle, orbicular, 2.5-3.5 cm. diameter, widely and slightly crenate, veins 14-15, peduncles 12-27 cm., mostly longer than the petioles; umbels proliferous expanded, many flowered, the secondary umbels usually capitate, terminating the pedicels, flowers yellow, fruits truncate at the base, 2.3 mm. broad, .7 mm. long, carpids 3-ribbed, the intermediate prominent, the lateral corky.

Muddy banks of a dried-out lagoon about 4 kilometers south of Progreso, Yucatan (1677). The long strictly-erect scapes and petioles, yellow flowers, and venation of the leaves, immediately separate this species from its cogeners. Type in Herb. Field Col. Mus. Cat. No. 61677.

Foeniculum Foeniculum (L.) Karst. Deutsch. Fl. 837.

Anethum F. Linn. *Foeniculum vulgare* Mill. Escaped to the margin of open woodland at Walsingham, Bermuda (93).

Daucus Carota Linn. Sp. Pl. 242.

Sparingly introduced along roadsides at Hamilton and Walsingham, Bermuda (109).

MYRSINACEÆ.

JACQUINIA ARMILLARIS Jacq. Pl. Carib. 15.

At Port of Poncé (684) and Guanica (717), Porto Rico. Leaves cuneate-spathulate, 4-5.5 x 2-2.7 cm., margins revolute, and apex emarginate.

PLUMBAGINACEÆ.

PLUMBAGO SCANDENS Linn. Sp. Pl. 2:215.

Climbing among shrubbery on the bay shore south of Charlotte Amalia, St. Thomas, where it is known as "Blister-leaf;" racemes short, averaging about 9 cm. (446). Hedges in the suburbs of San Domingo (883), racemes 24 cm. Morro Hill, Santiago de Cuba (1792), racemes 18 cm.

SAPOTACEÆ.

CHRYSOPHYLLUM MONOPYRENUM Sw. Prod. Veg. Ind. Occ. 49.

C. oliviforme Lam. *non.* Linn. Woodlands center of the Island Cozumel (1555), where it is called "Cainito Silvestre" (wild cayuito), and by the Mayas Chi-cé or Chi-zé, which is not translatable. Leaves from 8-10 x 4-5.5 cm., ovate, pointletted, golden-tomentose beneath; fruits oliviform, 1.7 x .8 cm., monospermous, olivaceous.

GENTIANACEÆ.

EUSTOMA EXALTATUM (L.) Salisb. Parad. Lond. t. 34.

Gentiana Linn. *E. silenifolium* Salisb. Sandy soil along road from Progreso to Merida (near Progreso), Yucatan (1725), 45-65 cm. high, leaves 3.5-4.5 x 1-1.5 cm. In full bloom.

LIMNANTHEMUM HUMBOLDTIANUM (Kth.) Griseb. Gen. e. Sp. Gent. 347.

Villarsia Kth. Ditches in pasture near Santurce, Porto Rico (302), in full flower.

APOCYNACEÆ.

PLUMIERA ALBA Linn. Sp. Pl. 210.

South shores of Culebras Island (604) on rocky hillside, trees 4 to 5 meters high, bare, only a few blooming branches found, and one tree in leaf. Peduncles 10-12 cm. long, flowers 7 cm. in diameter; leaves 20-25 cm. long, 2.2-3 cm. broad, acuminate.

PLUMIERA OBTUSA Linn. Sp. Pl. 210.

South shores Cayman Brac (1229), infrequent in rocky woodlands, leaves 6 x 4 cm. (juvenile). Most of the plants seen were bare, one or two bore flowers only, and one only bore a few leaves, but no flowers.

VINCA ROSEA Linn. Syst. 10:914.

Near dwellings and fully escaped into pastures at Cataño (160) and Santurce (298), Porto Rico. Bodden Bay road, Grand Cayman (1331), far from habitations, and appearing as if native, though doubtless introduced originally by man.

Tabernæmontana citrifolia Linn. Sp. Pl. 210.

Margins of woods at San Miguel and the Caleta, Cozumel (1493, 1511). Flowers creamy-white. The plant is called "Uɔupek," "smell of the dog," by the Mayas.

Thevetia Thevetia (Linn.) comb. nov.

Cerbera Thevetia Linn. Sp. Pl. 209. Frequent on the high mountains above Charlotte Amalia, St. Thomas (529).

Echites Andrewsii Chapm. Fl. So. St. 359.

E. neriandra Griseb. Open fields center of Grand Cayman (1373). Pubescent climber, leaves ovate-oblong, pale beneath, 6 x 4 cm., apex mucronate, truncate and sometimes slightly emarginate on the same plant, peduncles 2.5 to 6 cm. long, several-flowered, calyx lobes linear-acuminate (7 mm. long), slightly longer than the cylindrical portion of the corolla tube, corolla downy, yellow, 3 cm. long, limb spreading 4 cm. Another specimen from the same locality (1366) has smaller leaves (4.3 x 1.8 cm.), more strongly pubescent on both surfaces, ovate-lanceolate, all mucronate, and flowers paler yellow (Prang Y, 3; the previous specimen being Y, 1).

Echites repens Jacq. Enum. Pl. Carib. 13.

Infrequent in shady opens near Port Antonio, Jamaica (974). Leaves 8.5 x 2.2 cm., peduncles 4 cm., pedicels 8 mm., calyx-lobes 4 mm., corolla tube, cylindrical portion 1.7 cm., expanded portion 2.2 cm., lobes 2 cm., stem glabrous, internodes about 10 cm.

Echites rosea A. de C. Prod. 8:450.

Dry hillsides, The Ovens, and Morro Hill, Santiago de Cuba (1102, 1113). Stems slender, tortuous verrucose, leaves elliptical-ovate, 2 x 1 cm. (except near the base of one individual (1102) where the leaves were very large for the species, being 4.3 x 2.1 cm.), cordate at the base, and strongly mucronate at the apex, prominently netted-veined beneath, smooth and coriaceous above, short petioled, peduncles axillary and terminal, about .5 cm. long, pedicels ½ the length of the peduncle, corolla tube: cylindrical portion 2 cm., expanded portion 1.5 cm., lobes about 1.3 cm. long, bright rose-lake (Prang R R V, 1).

Echitis umbellata, Jacq. Pl. Carib. 13.

Fields about Georgetown, Grand Cayman (1243). Leaves large (6.5 x 4.5 cm.), strongly mucronate, corolla tube 3 cm. long, limb 2 cm. broad.

Nerium Oleander Linn. Sp. Pl. 209.

Pagets and Hamilton, Bermuda (66, 117). Although comparatively a recent introduction in Bermuda, the plant is now so thoroughly spread about all the larger islands as to take on the character of a more or less noxious weed.

ASCLEPIADACEÆ.

Asclepias curassavica Linn. Sp. Pl. 215.

Dry roadsides at Paget's, Bermuda (40), pastures at Caguas,

Porto Rico (195), fields, south shore of Culebras Island (595, 600), grassy upper beach south of Port of Ponce (669), and Guanica (698), Porto Rico, old weedy fields Bodden Bay Road, Grand Cayman (1323), damp meadow at the Caleta, Cozumel (1516), and dry sandy fields near Progreso, Yucatan (1691). These plants are all narrow and strongly petiolate leaved, leaves 4.3-7.5 x 1-1.5 cm., otherwise they agree with the following: Dry hillsides near Charlotte Amalia, St. Thomas (434), old fields opposite San Domingo city (780), a very shrubby branching form; rich soils near Port Antonio, Jamaica (922), and old pastures near San Miguel, Cozumel (1495), in these the leaves are sub-sessile, larger and broader, lanceolate, 10-13 x 2.7-3.3 cm.; the plant is here called Xanal Kak, "Same as Fire," in allusion to the intense flaming-orange flowers.

ASCLEPIAS NIVEA Linn. Sp. Pl. 215.

Fields opposite San Domingo city (834), flowers greenish-white, whole plant puberulous, petioles 1.3-1.5 cm., leaves narrowly-lanceolate pointed 6 x 1.5 cm. Not in fruit.

CALOTROPIS PROCERA (Willd.) Dryand, Ait. Hort. Kew. ed. ii., 2:78.

Plentifully scattered over the mountain fields south of Charlotte Amalia, St. Thomas (390). Leaves 17-20 x 14-16 cm., sub-sessile, the auricles clasping the stem, pointleted, milky juice very profuse. Runs wild also on the south shore fields of Culebras Island, doubtless brought there from St. Thomas (635), where it is called "Silk Cattún;" prolific and plentiful in fields along the coast of Porto Rico west of Ponce (666).

This species is a native of Persia. The stem yields a good fiber, and the sap a caoutchouc that forms gutta-percha notable as being a good conductor of electricity. The bark bast also yields a fine white fiber.

METASTELMA SCHLECHTENDALII Decne. de C. Prod. 8:513.

Plentiful, climbing over shrubbery at southwest point Cayman Brac (1197).

GONOLOBUS MARITIMUS R. Br. Mem. Wern. Soc. 1:35.

Ibatia muricata Griseb. Fruits only, from roadsides near Guanica, Porto Rico (741).

CONVOLVULACEÆ.

DICHONDRA REPENS Forst. Char. Gen. 39.

Dry hillsides in open woods near Hamilton, Bermuda (121). Not in flower nor fruit.

QUAMOCLIT COCCINEA (Linn.) Moen. Meth. 453.

Ipomœa Linn. Climbing over shrubs, out of season and rarely seen. Santurce, Porto Rico (300), at the Caleta, Cozumel Island (1522), barely in flower.

Ipomœa Antillana nom. nov.

Ip. cymosa Lindl. Bot. Reg. (1843) :24, *non* G. F. W. Mey. Prim. Fl. Esseq. 99 (1818); *nec* Roem. and Schult. Syst. 4:241 (1819); *Ip.*

sidæfolia Chois. in Mem. Soc. Phys. Genev. 6:459 (1833), *non* Schrad. in Goett. Gel. Anz. 1:719 (1821).

Glabrous, leaves cordate 7-9 x 5-7 cm., basal sinus 5-8 mm. pointed and mucronate or simply acute-mucronate, entire, petioles somewhat longer than the peduncle and about the length of the leaf, cymes many-flowered corymbiform, sepals oblong, bluntish, 6-8 x 3 mm., the interior one-third as long as the corolla, the exterior shorter, corolla short 2.5 x 2 cm. Guanica, Porto Rico (754). Climbing over hedgerows suburbs of San Domingo (803, 878).

Ipomœa sinuata Orteg. Hort. Matr. Dec. 84.

Ip. dissecta Pursh, *non* Willd. Climbing over shrubbery at "The Ovens," Santiago de Cuba (1123). Leaflets 3 cm. long, being only half the size of those in specimens gathered at Spot Bay, Grand Cayman (1285).

Ipomœa Batatas (Linn.) Poir in Lam. Encyc. vi., 14.

Convolvulus B. Linn. Cultivated at Spot Bay, Grand Cayman (1290).

Ipomœa Bona-nox Linn. Sp. Pl. ii., 228.

Climbing high over shrubs and trees near the coast shores of Santiago Bay, Cuba (1001), and near Georgetown, Grand Cayman (1397). The great length of the internodes, petioles and corolla-tube plainly separate this species from the next.

Ipomœa carnea Jacq. Enum. Pl. Carib. 13.

Rocky scrubland south of the lagoons near Progreso, Yucatan, (1695). Branches thick and ligneous, short and thickly foliate, sepals 5 cm. long, corolla 8 cm., fully developed leaves 6 x 6 cm., pointleted, entire.

Ipomœa carnosa R. Br. Prod. 485.

I. arenaria R. & S. *Batatas littoralis* Choisy. *Ip. acetosæfolia* R. & S. Sandy seashores on the upper beach at Santurce, Porto Rico (1798), south shores of Cayman Brac (1222), and Grand Cayman at Spot Bay (1310). In none of the specimens from these localities can be found the lobed leaves so frequent in the plants of other localities. In these the leaves are oblong-lanceolate 2.5-5 x 1-2 cm. On account of the drifting of the sand the stems are always buried and seldom is any portion of the plant visible except now and then a leaf and flowering branch; the petioles of the stem leaves vary with the depth to which the stem is buried. When the burial of the leaves is of sufficient period to cause their death, rootlets are given off at their nodes, and the petiole is converted into a branch which forces its way upward through the sand, gives forth new leaves and finally flowers.

Ipomœa ciliolata Pers. Ench. Bot. 1:183.

Rare, only one plant seen, in a sandy field at Cataño, Porto Rico (250).

Ipomœa fastigiata Sweet Hort. Brit. 288.

Ip. cymosa Mey. *non* C. & S. *Ip. stenocolpa* Garck. Hedges

suburbs of San Domingo (852); over shrubbery at San Juan Hill, Santiago de Cuba (1056); and in the center of Cozumel, where it is called by the Indians "H-ebil," meaning "Climber" (in the masculine gender).

IPOMŒA MOLLICOMA Miq. Stirp. Surin. Sel. 132.

Convolvulus umbellatus Linn. *non* Ip. umbellata Linn. *Ip. umbellata* Mey. *Convolvulus sagittifer* H. B. K. Over stone fences and shrubbery at Caguas (200), Cataño (254), Bayamon (326), and Guanica (719, 745, 746), Porto Rico; south shore Culebras Island (618), and Bodden Bay road, Grand Cayman (1322). Leaves cordate-lanceolate 5-7 x 2.5-4 cm., pilose on the larger veins beneath.

IPOMŒA PES-CAPRÆ (L.) Roth. Nov. Pl. Sp. 109.

Convolvulus P. Linn. *Ip. biloba* Forsk. A very common seaside species throughout our range though rarely found in flower at this season. On sand beaches it is usually the first vegetation to be found beyond the littoral margin, and where the beach is steep-to and low its habitat on the coral rocks is the same. Islands in Hamilton harbor, Bermuda, all the beaches about San Juan and its harbor, Porto Rico (260), where it trails seaward from the upper beach over the clear sand to the water line. Shore of Charlotte Amalia, St. Thomas (425), rocky coast of San Domingo (805, 865), shore of Santiago Bay near Morro (1091), south shores of Cayman Brac (1228) and Grand Cayman; east shore of Cozumel, and the beach at Progreso, Yucatan (1651).

IPOMŒA QUINQUEFOLIA (Linn.) Griseb. Mem. Am. Acad. 1863:526.

Convolvulus q. Linn. Climbing over low shrubbery environs of Charlotte Amalia, St. Thomas (374), and San Domingo (862). Pedicels divaricate 1-1.5 cm., peduncles filiform 4 cm. long: corolla 2 x 1 cm., central leaflet 3-3.5 cm. x 4-8 mm.

Ipomœa ruber (Vahl.) *comb. nov.*

Convolvulus ruber Vahl. Eclog. Am. 2:12. *C. setifer* Spr. Syst. 1:577, *C. breviflorus* Spr. Syst. 1:606, *Ip. setifera* Poir. Encyc. 6:17, *Ip. breviflora* Mey. Esseq. 100. Climbing high over tall shrubs at Cataño, Porto Rico (146, 147, 158). Over stone fences outskirts of Port Antonio, Jamaica (946). Our specimens agree perfectly with the description, to which might be added from them: sepals 2 of the exterior 5-plaited, the other 3-plaited; oblong-acuminate 2.3 x 1 cm. aristate (aristæ 1 cm. long), the keels of the plaits irregularly rounded-dentate; the 2 interior scaphoid cordate-deltoid aristate, 1.2 x .7 cm. aristæ 2 mm. long. Leaves sagittate-hastate 8 cm. from petiole to apex, 10 cm. from apex to tip of auricle, 8 cm. from tip to tip of auricle-base, 2.9 cm. broad at constricted part above the auricles, 3.2 cm. broadest part (upper third) auricle-pointed, tip emarginate-mucronulate, petiole about the length of the leaf.

Ipomœa Steudeli nom. nov.

Ipomœa arenaria Stend. Nom. ed. 2, 1:815, non R. & S. Syst. 4:247. *Exogonium arenarium* Choisy. South shores of Culebras

Island (614) and Guanica, Porto Rico (763), just appearing in bloom and leaf.

Ipomœa triloba Linn. Sp. Pl. 161.

Fields, creeping over low herbage center of the island of Grand Cayman (1385). Branches glabrous, leaves 4-5 cm , leaflets mucronulate, seeds glabrous, polished.

Ipomœa Tuba (Schl.) G. Don. Syst. 4:271.

Convolvulus T. Schl. *Ip. grandiflora* Lam. *non* Jacq. South shore of Cayman Brac (1234), climbing over low bushes. In our specimens the leaves are often three lobed at the middle or tending to this form near the auricles, basal sinus deep and narrow (in *Bonanox* it is shallow and broad).

Ipomœa ventricosa (Bert.) G. Don. Syst. 4:274.

Convolvulus v. Bert. Climbing over hedges near Port Antonio, Jamaica (980), probably planted.

Pharbitis acuminata (Vahl.) Choisy de C. Prod. 9:348.

Convolvulus acum. Vahl., *Ipomœa acum.* R. & S. One specimen only, that from the base of Morro Hill, Santiago de Cuba (1079). Sepals 2.5 cm. long, hispid-ciliate at the base and basal margin, corolla 9.5 cm. long, branches pilose.

Pharbitis cathartica (Poir.) Choisy. loc. cit. 342.

Ipomœa cathartica Poir. The most prominent character running through all of the following specimens is the deep madder-lake color of the corolla limb, which is broad (about 6 cm. diam.) in all; the calyx lobes are also constant. The variation in the leaf form is noted for each locality. Moist grounds near Port Antonio, Jamaica (933), leaves imperfectly 3-lobed 11 x 8 cm. outline cordate-acuminate. Dry sandy soil south shores of Cayman Brac (1227), leaves regularly 3-lobed, 7 x 6.5 cm. (1235), leaves complete or slightly 3-lobed 5.5-7 x 4.5-6 cm. attenuate-acuminate. Dry sandy soil near Georgetown, Grand Cayman (1244), leaves cordate-orbicular complete or showing unilaterally an attempt at trilobation, 5-6 x 5-6 cm; similar situation (1246) leaves cordate-ovate acuminate, sinuately 3-lobed, 7.5 z 4.5 cm·; another (1403), leaves complete cordate-ovate mucronate, and hederaceously and deeply 3-lobed, 6-7 x 5-6.5 cm.; another from the center of Grand Cayman (1372) in woodlands, has the leaves varying from cordate-orbicular to 2-3-lobed, 6 x 5 cm.; rocky shores of Cape Corientes, Cuba (1452), leaves as in the last; woodlands of the center of Cozumel (1793), leaves all entire cordate-acuminate 7-8.5 x 5.5-6.5 cm.

Pharbitis Nil (Linn.) Choisy. Mem. Soc. Phys. Genev. 6:441.

Convolvulus Nil Linn. as to Dill. loc. cit. f. 92, *Ph. hederacea* Choisy., *Ipomœa hederacea* Jacq., *Ip. Nil* Roth. Suburbs of Charlotte Amalia, St. Thomas (418), the small slightly pilose-leaved form. Calyx lobes 1.8 cm. long, limb 2.5 cm. in diameter.

Pharbitis purpurea (Linn.) Voigt. Hort. Suburb. Calc. 354.

Convolvulus purp. Linn. *Ipomœa purp.* Linn. *Ph. hispida* Chois.

Hedgerows near Walsingham, Bermuda (102); and climbing over shrubbery in fields near the center of Grand Cayman (1381).

PHARBITIS TRILOBA Miq. Am. Mus. Bot. Lugd. Bot. 2:93.

Convolvulus hederaceus Linn. as to Dill. Elth. t. 81, F. 93. (Ph. hederacea Chois. referred to Pharbitis Nil.) Roadside at Hamilton, Bermuda (139). This species is readily distinguishable from the next by its large flowers (corolla 7 cm. long, limb 4.5 cm. broad), attenuate erect calyx lobes 2.5 cm. long, and short but distinct pedicels.

JACQUEMONTIA PENTANTHA (Jacq.) Don. Gen. Syst. 4:283.

Convolvulus pentanthus Jacq. *J. violacea* (Vahl.) Choisy. Extensively climbing over herbage and low shrubs. Charlotte Amalia, St. Thomas (403); south shores of Culebras Island (610), bay shores at Guanica, Porto Rico (701); roadsides near San Domingo city (850, 855); old garden shrubbery near San Miguel, Cozumel (1542), where it is called X-yaax h-ebil, "Green-climber;" and in the scrubland south of Progreso, Yucatan (1663).

Convolvulus obcordatus sp. nov.

Prostrate trailing, stems long terete glabrous, branches virgate appressed long-pilose, leaves small mostly 1.2 x 8 cm., a few 2 x 1.5 cm. obcordate the lobes mostly unequal, the sinister lobe the smaller, glabrous; petiole filiform about two-thirds the length of the lamina. Inflorescence solitary in the axils of all the leaves, peduncle about the length of the leaf and its petiole, bibracteate at or below the middle, bracts minute linear. Flowers small (7 mm.), white, slightly tinged with blue, calyx of three sizes of sepals, the two outer largest, inner smallest and the fifth mediate between the pairs, the outer ovate blunt above, half the length of the corolla, style 2-lipped at the apex. Capsule globose 2-valved 4-seeded, seeds glabrous, 2.2 x 1.6 mm., finely reticulate-tuberculate.

In general habit similar to Evolvulus nummularius L. Along the bed of the railroad about 8 kilometers south of Progreso, Yucatan (1707), only one station found. Type in Herb. Field Col. Mus. Cat. No. 61707.

CONVOLVULUS JAMAICENSIS Jacq. Obs. 3:6.

Southwest point of Cayman Brac (1198, 1205), and the scrubland south of Progreso, Yucatan (1726).

CUSCUTA AMERICANA Linn. Sp. Pl. 124.

Moist ditches, running over various low and tall weeds near Charlotte Amalia, St. Thomas (407, 495); and over weeds on the margin of an old clearing at Pedernales Point, Isle of Pines (1439).

BORRAGINACEÆ.

CORDIA CYLINDRISTACHYA R. & S. Syst. 4:459.

Bay shores near Guanica (750, 767), in which location the species is supplanted by C. globosa in Cuba.

Cordia gerascanthoides Kunth. H. B. K., Nov. Gen. et Sp. 3:69.

Spot Bay, Grand Cayman (1273, 1300), where it is called "Spanish Elm."

Cordia globosa Kunth., *loc. cit.* 76.

A common shrub in the environs of San Domingo (792); and about the shores of Santiago Bay (1008) and Cape Corientes, Cuba.

Cordia Sebestena Linn. Sp. Pl. 190.

Upper beach and open woodlands Spot Bay, Grand Cayman (1358), the usual elliptical leaved form with sparing dentation. Leaves densely pilose-scabrous 7-8 x 5-5.5 cm., apiculate, distantly repand denticulate, the calyx tube as long as that of the corolla and unequally 5-dentate.

The following plants differ materially from the preceding and should be placed under C. speciosa Salisb. Prod. iii. The leaves are large, ovate to ovate lanceolate 12-20 x 7-13 cm., pointed, points often 2-3 cm. long, irregularly serrate, rounded at the base. The flower clusters in a large spreading corymbiform cyme, the flowers larger and longer pedicelled, the corolla tube one-third longer than that of the calyx, the limb spreading to 3.5 cm. Margins of salt lagoons south shore of Cayman Brac (1223); lagoon north of Georgetown, Grand Cayman (1261), and the east shore of Cozumel (1261).

Cordia ulmifolia Juss. Dum. Cours. Bot. Cult. 2:148.

Roadside south of Charlotte Amalia, St. Thomas, (536). Shrubby, leaves bicolor, downy beneath, few scattered hairs upon the upper surface, upper half serrate, lower entire.

Tournefortia gnaphalodes R. Br. Prod. 496.

On the beach line facing the open sea, very seldom, if ever, found in bays or where partially dry reefs guard the shore. Shores near Walsingham and the Flats, Bermuda. On the beach near Santurce, Porto Rico. Open beach north of Charlotte Amalia, St. Thomas. Free sea beach south shore of Culebras Island (638), Ratones Island, Port of Poncé, Porto Rico. West beach of Mona Island. Not noted at San Domingo, the coast about there being rocky and steep-to. The Creek, Cayman Brac (1177), where it grows from the crevices of the coral, and is known as "Sea Lavender." Spot and Bodden Bay shores Grand Cayman, also along shores north of Georgetown. Sandy beach at Pedernales Point, Isle of Pines (1429), where it forms dense masses. Shores at Cape Corientes, Cuba. Plentiful along the beach on the east shores of Cozumel. North shore of Yucatan at Progreso (1650), where the shrubs are all small. A few clustered clumps about the center of the west coast of Perez Island (1745), and one shrub only, just appearing, on the south point of Pajaros Island, Alacran Shoals.

Heliotropium curassavicum Linn. Sp. Pl. 130.

Sandy spots at Cataño (330) and Guanica (716), Porto Rico. Sandy shores of the bay of Santiago de Cuba (1005), a large-leaved (3.7 x .5 cm.) straggling form, thick stemmed and very leafy, with

short (3 cm.) spikes. The same form from Progreso, Yucatan (1735), and the more usual short-leaved form, with a slaty-purple bloom on the leaves, from the latter station (1655).

HELIOTROPIUM INDICUM Linn. Sp. Pl. 130.

Old fields near Caguas (211) and on south shores Culebras Island (647), Porto Rico. Suburban banks and fields Charlotte Amalia, St. Thomas (414). Low, stems woolly, leaves narrowing to the petiole irregularly repand crenate, 9 x 5 cm., spines 7 cm.; the same form from the suburbs of San Domingo (810), another (776) from the same locality is tall and shrubby with very long spikes 15-24 cm. Fields about El Caney, Santiago de Cuba (1029), a very low form (8 cm.) with large, pilose, cordate reticulate leaves 8 x 5.5 cm. and dwarfish spikes 3 cm. long.

HELIOTROPIUM PARVIFLORUM Linn. Mant. 2:201.

Waste ground south shores of Culebras Island (585) and Guanica (691), Porto Rico. Common in waste places about Charlotte Amalia, St. Thomas (436), leaves ovate *blunt* 1.7-3 x 1.2-2 cm., plentifully scattered-hairy above, spikes 6.5 cm. Environs of San Domingo (781), leaves as in the previous plant but *acute* and sparingly scattered-hairy above, developed spikes 12 cm. Shores of the Bay of Santiago de Cuba (102), leaves ovate lanceolate 4-5 x 1.7-2 cm. sparingly scattered-hairy above, strongly reticulate veined above and beneath. San Juan Hill (1049) and Morro Hill (1084), Santiago de Cuba, the former with lanceolate leaves 4.5-7 x 1.3-2 cm., acute and tending to apiculation, the latter with broadly lanceolate leaves 6-8 x 2.5 x 3.5 cm., acute, the upper surface subglabrous. Spot Bay, Grand Cayman (1287), leaves small, lanceolate, acute strongly reticulate and scattered-hairy 2-4.5 x 1.1-1., 9 cm., spikes slender, about 9 cm. long when fully fruited. Woodlands and opens center of the island, Cozumel (1538), leaves broadly lanceolate, spikes short (7 cm. in full fruit), scattered hairiness reduced to a minimum. An infusion of this plant is used in domestic practice on this island in such cases of illness as are supposed to be due to a thick condition of the blood. It is called by the Indians "Ne-maax," or in the feminine gender, "X-ne-maax," "Monkey-tail," and by the Mexicans of Yucatan "Rabo de Mico," meaning the same, in allusion to the perfect resemblance of the inflorescence to that appendage. A similar form collected along the roadsides of Progreso, Yucatan (1704), but with almost the hairiness of *H. Indicum*, and with large ovate-lanceolate reticulate leaves 4.5-6.5 x 2.3-3 cm.

VERBENACEÆ.

LANTANA ACULEATA Linn. Sp. Pl. 627.

Plants shrubby, tomentose and more or less thorny with small recurved hook-like aculeæ, leaves narrower ovate-lanceolate than those of *involucrata* and not so sharply acuminate and the peduncles much longer, leaves tomentose 3.5-5 x 1.2-3 cm., peduncles 4-6.5 cm. Flowers all chrome yellow, not changing to red. Scrub about Charlotte Amalia, St. Thomas (401, 507, 530), old fields near San Domingo

city (843), San Juan Hill, Santiago de Cuba (1054), and San Miguel, Cozumel (1496), this last being notable for its dense woolly pubescence and larger, broader leaves 6-7 x 4-4.8 cm.

Lantana Camara Linn. Sp. Pl. 627.

Islets in Hamilton Bay, Bermuda (19), with large sharply serrate leaves 5.8-7.8 x 3.8-4.8 cm. Dry hillsides at Bayamon (339), Caguas (207), and Guanica (747), Porto Rico. Suburbs of San Domingo city (799), hillsides about Port Antonio, Jamaica (979), rocky upper beach at Cape Corientes, Cuba (1449), leaves very strongly scabrous above. Southwest Point, Cayman Brac (1202, 1215), Bodden Bay Road in open fields, Grand Cayman (1320, 1332).

From observations covering a large number individuals examined during the trip, and from the material collected, I am fully satisfied that this species is distinct from L. aculeata.

Lantana horrida H. B. K. Nov. Gen. & Sp. 2:261.

Dry rocky shores of the lagoon south of Progreso, Yucatan (1673). Branchlets tetragonal, tomentose, sharply and strongly aculeate; leaves ovate acute 4-5 x 3-4 cm., evenly crenate-toothed scabrous-pubescent above, tomentose beneath; flower heads large, chrome-yellow.

Lantana involucrata Linn. Amoen. Acad. 4:319.

L. odorata Linn. Throughout the Bermuda islands the principal shrub there (5,14,79), leaves 2-3 x 1.3-1.7 cm. The usual form of this species is plentiful on the dunes at Santurce (282), and on the south shores of Culebras Island (590, 637), where it grows to a tree-like shrub 20 feet high and 15-20 cm. in diameter; on the seashore fields of the Port of Ponce (678), and the steep dry hillsides at Guanica (715), Porto Rico. Plentiful about Charlotte Amalia, St. Thomas (427, 440), of more thrifty, cleaner and healthier appearance than the Bermudan specimens, leaves broader and larger, serrate 2.8-4.2 x 2.2-3 cm., odorous, especially the apical leaves and flowers. Base of Morro Hill, Santiago de Cuba (1795), poor depauperate specimens evidencing the aridity of the winter season; leaves 1.3-2 x .8-1 cm. Southwest Point, Cayman Brac (1218), a form with long petioled (1.5 cm.) leaves 2.5-3.5 x 1.8-2.5 cm., and long peduncles (3.5 cm.) but with small flower clusters. Near Georgetown, Grand Cayman (1252), dwarfish and depauperate, the prey of some leaf-cutting insect; branches denuded, their tips only leafy. Cape Corientes, Cuba, fine, healthy, clean specimens, counterparts of those of St. Thomas (1451, 1454). Pedernales Point, Isle of Pines (1417), like the last. Barrens beyond the lagoon south of Progreso (1716), in this locality the leaves close up during the heat of the day.

In all the above forms the base of the leaf is deltoid, while in the following it is truncate and broad: The Ovens, Santiago de Cuba (1109), clean and vigorous, not reduced like 1795 above, and east shore of Cozumel (1597).

Lippia geminata Kth. H. B. K. Nov. Gen. et Sp. 2:266.

Open woodlands near Chichen Itza, Yucatan (1626). Heads large 1.7 x 1 cm., on long pedicels 3.2 cm.

LIPPIA NODIFLORA (L.) Michx. Fl. Bor. Am. 2:15.

Verbena n. Linn. Ditches near Hamilton, Bermuda (118), a somewhat depauperate growth as compared with the more southern forms, leaves 1.2-1.4 x .4 x .6 cm., peduncles 2.5 cm., heads 4 mm. diameter. Two forms of this species occur at Cataño, Porto Rico, one low and strongly prostrate with the peduncle the only strict part of the plant, and very small leaves 1.2 x .5 cm., peduncles 3.5 cm., heads .5 cm. (331); the other (176, 253) with the branches erect, leaves 3.5-5 x .7-1.3 cm., peduncles 5.5 cm., and heads .7-.8 cm. in diameter. Center of island of Grand Cayman in a boggy soil (1365); border of a brackish lagoon on the north shore of Cozumel (1595), leaves 2-2.5 x .8-1 cm., peduncles 5 cm. long, heads 1 cm. long, 6 mm. diameter. Sandy ditches near Progreso, Yucatan (1722), a form with broader leaves (2.5 x 1.6 cm.) and longer purplish heads (1.6 cm. long, 7 cm. broad).

VALERIANOIDES JAMAICENSE (Linn.) Medic. Phil. Bot. 1:177.

Verbena Jam. Linn. *Stachytarpheta Jam.* and *Indica* Vahl. Common on the smaller islands in Hamilton Bay, Bermuda (17); dry fields and roadside banks at Cataño (151); south shores of Culebras Island (581), and at Guanica (687), Porto Rico; under coco trees at The Creek, Cayman Brac (1173), where it is known as "Verveen" and used as a purgative; and fields in the center of the island of Cozumel (1568). These specimens all agree with the descriptions of *Stachytarpheta Indica* and *Jamaicensis*, while the following take on the characters given for *S. strigosa* Vahl. (= *Valerianoides Jamaicense Indicum* forma *strigosum* (Vahl.) O. Kuntze.), having the linear-acuminate setaceous bracts, which is the only character that in reality has any claim to permanence. The dentation of the calyx-lobes, sulcation of the rachis, and breadth of the bracts is very variable and too inconstant to form even a varietal distinction; this, together with the fact that almost any dry field in the neighborhood of say Charlotte Amalia, St. Thomas, or the Island of Grand Cayman will yield all the species known as *Indica*, *Jamaicense* and *strigosa*, would indicate that these are all merely forms of one species. Paget's, Bermuda (39), hillsides above Charlotte Amalia, St. Thomas (419), fields in the environs of San Domingo city (864), stony bed of a dry stream near Port Antonio, Jamaica (900), and fields along the Bodden Bay road, Grand Cayman (1340).

PRIVA LAPPULACEA (L.) Pers., Syn. ii., 1807.

Common as a roadside weed at Cataño, Porto Rico (337), Port Antonio, Jamaica (921); San Juan Hill, Santiago de Cuba (1043, 1048), tall and widely branching, branches attenuate. Spot Bay, Grand Cayman, (1286); low, compact and regular in form at center of Island of Cozumel (1548), where it is called *Xpakunpak*. "Stick-tight," alluding to the fruits. The Mayas use the bruised herb as a remedy for gonorrhœa.

CITHAREXYLUM QUADRANGULARE Jacq. Enum. Pl. Carib. 26.

A tall tree along roadsides and about plantations near Hamilton, Bermuda (122), where it has all the appearances of an introduced

species, and was doubtless brought from Jamaica, as it here bears the Jamaican name "Fiddlewood."

Duranta repens Linn. Sp. Pl. 637.

D. Plumieri Jacq. Hillsides bordering the Bay of Guanica, Porto Rico (757); in fruit only.

Ægiphila elata Sw. Prod. Veg. Ind. Occ. 31.

Fields and scrublands near Spot Bay, Grand Cayman (1281). A form with the twigs and inflorescence downy, leaves coriaceous, strongly reticulate-veined, 10-12 x 5-6 cm.

Petitia Pœppigii Schau. de C. Prod. 11:639.

On the high tableland above "The Creek," Cayman Brac (1164), where the tree is called "Black Fiddlewood" and is used for ship timbers. Probably not distinct from P. Domingensis Jacq.

Clerodendron aculeatum (Linn.) Griseb. Fl. Brit. W. Ind. 500.

Volkameria Linn., *Ovieda* (L.) Hitch. Center of Grand Cayman (1380). Various coast situations in Porto Rico; the shrubs on the north shores are open, branchy and free flowering, those from the south shores compact and densely leafy. Culebras Island (591), Port of Poncé (663), and Guanica (739, 752).

Clerodendron fragrans (Vent.) Willd. Enum. Hort. Berol. 659.

Volkameria Vent. Borders of streams on hillsides near Caguas, Porto Rico (232). High up in mountain woods above Charlotte Amalia, St. Thomas (556), where it has so far escaped from the neighborhood of dwellings as to appear native. Hedges in the environs of San Domingo city (772).

Avicennia nitida Jacq. Enum. Pl. Carib. 25.

Growing on the dryer margins of mangrove swamps, where it asserts itself by its dusty white appearance. Shallow bays and lagoons, Bermuda Islands; swampy shallows near Cataño, Bayamon; south shores of Culebras Island (582), and Ratones Island (657). Port of Poncé, Porto Rico. Shores of the bay of Santiago (1009, 1019), southwest point of Cayman Brac, and near Progreso, Yucatan.

LABIATACEÆ.

Teucrium inflatum Sw. Prod. Veg. Ind. Occ. 88.

Moist hillside near Port Antonio, Jamaica (994). Differs from most specimens of the species in its larger leaves (6.5-9.5 x 4.5-5.5 cm.) and denser growth.

Glechoma hederacea Linn. Sp. Pl. 578.

Nepeta Glechoma Bth. A few plants in woodlands and old fallow fields near Hamilton, Bermuda (129).

Leonotis nepetæfolia (Linn.) R. Br. in Ait. Hort. Kew. 3:409.

Phlomis Linn. Fields, Walsingham, Bermuda (106). Mr. Reade,* writing in 1885, says of this species: "introduced in a few

*"Plants of the Bermudas or Somers' Islands."

gardens;" while not plentiful, I found it in several localities in Walsingham district, one, at least, far removed from any dwelling, the others sufficiently distant to assure me that the plant is spreading and naturalized here. Plants low (30 cm.), leaves small, 4 x 3 cm., globose whorls small, 1.5-2.5 cm. diameter. Pasture lands at Caguas (218) and Guanica (723), Porto Rico. Fields south of Charlotte Amalia, St. Thomas (384); tall, well developed and native; leaves 9 x 6.5 cm., heads 4 cm. diameter. Fields and roadsides about San Domingo (785), counterparts of the last. Hillsides near Port Antonio, Jamaica (965), doubtfully native, leaves 5 x 4, heads 2-4 cm. diameter.

LEONURUS SIBIRICUS Linn. Sp. Pl. 584.

Fallow fields and pastures at Caguas, Porto Rico (196). Waste ground along a stream south of Charlotte Amalia, St. Thomas (386). The usual stout, erect puberulous, with even the uppermost leaves at least dentate.

STACHYS ARVENSIS Linn. Sp. Pl. ed. 2:814.

Old fields at Walsingham, Bermuda (113), introduced from Europe.

Stachys arvensis Bermudiana var. nov.

Annual, 15-35 cm., virgately branching from the rootstalk, glabrous throughout, leaves ovate-cordate crenate, 2-2.6 x 1.8-2.3 cm. Sepals glabrous, the tips sharply and strongly long-aciculate.

Old fallow fields near Hamilton, Bermuda (128, 133).

Salvia Caymanensis Millsp. & Uline sp. nov.

Stems strictly erect, .5-1 meter; canescent above, woody below, leaves ovate-lanceolate, 2.5-3 x 1-1.4 cm., pale and tomentose beneath, pilose and dark green above, the lower cuneate, the upper subcordate at the base, acute, shallow crenate; petioles one-fourth the length of the blade; racemes terminal, strict, open, bracts lanceolate-acuminate, flowers pedicellate whorled, pedicels about half the length of the corolla, verticels 6-2-flowered, calyx glandular-hairy, 3-lipped, upper blue-green, blunt or pointed, 2 lower bright green apiculate, corolla blue, about twice the length of the calyx, style unequally bilabiate, the anterior branch flat, curved, about twice the length of the slender falcate almost aristate lip, nutlets olivaceous, 1.95 x .925 mm.

Sandy grassland and old pastures near Spot Bay, Grand Cayman (1295). Type in Herb. Field Col. Mus. No. 61295. Differs from S. serotina in its habit, leaves and calyx.

SALVIA OCCIDENTALIS Sw. Prod. Veg. Ind. Occ. 14.

Common in fields about Cataño, Porto Rico (141); Charlotte Amalia, St. Thomas (402), and in like situations near San Domingo (859). Moist hillside pastures near Port Antonio, Jamaica (992), and dry hillsides at El Caney, Santiago de Cuba (1030). Roadsides near The Creek, Cayman Brac (1186), and at Pedernales Point, Isle of Pines (1424).

SALVIA SEROTINA Linn. Mant. 1:25.

Fields and roadsides near Charlotte Amalia, St. Thomas (504),

leaves 1.8-2.5 x 1.4-2.3 cm., strongly pubescent upon the larger veins beneath, whorls 2-flowered. Environs of San Domingo (809), leaves as in the preceding, but strongly pubescent above and below, whorls 3-6-flowered. Meadows near Port Antonio, Jamaica (928), leaves 2-3.3 x 1.7-2.5 cm., pubescent on the veins beneath, whorls 3-6-flowered. On Morro Hill, Santiago de Cuba (1074), leaves 3 x 3.5 cm., slightly pubescent beneath, whorls distant 2-3-flowered. About the streets of San Miguel (1469) and in the woods of the interior (1575) of Cozumel; leaves 2.5-3.5 x 2.2-3 cm., glabrous, petioles and branchlets only slightly pubescent, whorls approximate 2-4-flowered. Forests of Chichen Itza, Yucatan (1634), leaves 1.5-2 x .9-1.3 cm., glabrous, branchlets long-pilose, racemes long-virgate, distantly few-whorled, whorls 2-4-flowered.

Salvia serotina sagittæfolia var. nov.

Differs from the species in its simple erect stem, long virgate branching inflorescence, sagittate leaves, 4 cm. long, 1.8 cm. broad at the base, densely pubescent beneath, linear bracts, and sagittate floral leaves.

Dry fields center of the Island of Grand Cayman (1391). Type in Field Col. Mus. Herb. No. 61391.

Salvia tenella Sw. Prod. Veg. Ind. Occ. 14.

Pagets (38) and Walsingham (86) in dry hillside pastures, Bermuda. Low, with small leaves, 1-1.5 x .8-1.2 cm., deltoid, hoary. *S. Micrantha* Vahl.

Satureia Brownii (Sw.) Briq. Eng. & Prantl. Pflanz. iv, 3:300.

Thymus Sw. *Micromeria* Bth. *Clinopodium* Kuntze. Damp meadow near the Caleta (1517) and San Miguel (1474), Cozumel, where it is called "Poleo," the Spanish for "pennyroyal."

Mesosphærum capitatum (L.) Kuntze Rev. Gen. 525.

Clinopodium c. Linn. *Hyptis c.* Jacq. Waste grounds at Cataño (170), and the most plentiful and striking weed at the settlement on Culebras Island. Environs of Charlotte Amalia, St. Thomas (518), a proliferous form with from 2-4 smaller and sessile heads in the axils of the peduncles, peduncles 2.6 cm. long, heads 2.4 cm. diameter, accessory axillary heads 1.5 cm. diameter: another curious form from this locality (554) has peduncles 8 cm. long, and heads 1.5 cm. diameter, with leaves 13 x 8 cm., the plant leafy to the top, the uppermost leaves being lanceolate, 10 x 4 cm. Fields about San Domingo (814), leaves oblong-lanceolate, 5.5-7.5 x 2-3.5 cm., peduncles 3 cm., heads 1.5 cm. Old fields near Port Antonio, Jamaica (955), leaves 5.5-7 x 2.5-4 cm., peduncles 2.5 cm., heads 1.5 cm. In all these the upper surface of the leaves is furnished with scattering hyaline 4-6 jointed hairs.

While the species was plentiful in every locality visited from St. Thomas westward to Jamaica, I failed to detect it at Santiago, or at any point from there westward to Yucatan. Mr. Combs found it (sparingly, however) in marshy grass lands near Cienfuegos, Cuba, hardly its natural habitat, and Mr. Johnson is credited, in

Biologia Centrali Americana, with having gathered it in "Yucatan and Tabasco."

MESOSPHÆRUM PECTINATUM (Linn.) Kuntze *loc. cit.*

Nepeta p. Linn. *Hyptis p.* Poit. A weed in old fields at Caguas, Porto Rico (205, 239, 240); south of Charlotte Amalia, St. Thomas (399). Fields and copses about San Domingo (829), a large growth with panicles over a meter in length. Base of Morro Hill, Santiago de Cuba (1078). Fields common along Bodden Bay road, Grand Cayman (1341). Environs of San Miguel (1477), and old fields inland (1549) Cozumel, where it is termed in Maya "Xoltéxnuc," or "Old Woman's Staff."

MESOSPHÆRUM SUAVEOLENS (Linn.) Kuntze *loc. cit.*

Ballota s. Linn. *Hyptis s.* Poit. Old fields near Charlotte Amalia, St. Thomas (496), leaves ovate-cordate, simply serrate, 2.5-3.5 x 1.5 x 3 cm., petioles the length of the blade, densely large-flowered. Coco groves at The Creek, Cayman Brac (1154), loosely floral, leaves hairy, 2.5-3 x 2.2-2.8 cm., doubly-serrate, stems and branches pilose. The plant is here called "Spikenard."

OCIMUM MICRANTHUM Willd. Enum. Hort. Berol. 630.

Rich soil at Cataño, Porto Rico (190). Suburban fields of Charlotte Amalia, St. Thomas (508); roadsides near Port Antonio, Jamaica (971); old fields near Spot Bay, Grand Cayman (1266); opens near San Miguel, Cozumel, where it is called "Cac-al-tun," signifying in Maya a plant from which it is a wearying task to strip the leaves; application indeterminable.

OCIMUM SANCTUM Linn. Mant. 1:85.

Steep dry hillside at Guanica, Porto Rico (689), profusely blooming and fruiting.

SOLANACEÆ.

PHYSALIS ANGULATA Linn. Sp. Pl. 183.

Roadsides at Guanica, Porto Rico (699), and the south shore of Culebras Island (586).

PHYSALIS PUBESCENS Linn. *loc. cit.*

Ditches along roadways near Port Antonio, Jamaica (937).

CAPSICUM FRUTESCENS Linn. *loc. cit.* 189.

Old garden spot at Pedernales Point, Isle of Pines (1423).

SOLANUM ACULEATISSIMUM Jacq. Coll. 1:100.

Waste grounds at Port Antonio, Jamaica (903).

SOLANUM AMAZONIUM Ker-Gawl. Bot. Reg. t. 71.

A tall shrubby form at the Caleta, Cozumel (1514), low and dwarfed in the stony scrubland south of Progreso, Yucatan (1694).

SOLANUM BAHAMENSE Linn. Sp. Pl. 188.

Scrublands near Pedernales Point, Isle of Pines (1445).

SOLANUM CALLICARPÆFOLIUM Kth. & Bouché. Ind. Sem. Hort. Berol. 1853.

Stony scrubland south of Progreso, Yucatan (1702, 1719).

Solanum inclusum Griseb. Fl. Br. W. I. 441.
Open scrubland on the mountain back of Charlotte Amalia, St. Thomas (528).

Solanum nigrum nodiflorum (Jacq.) A. Gr. Syn. Fl. 2, 1:228.
Solanum nodiflorum Jacq. Wayside ditches near Charlotte Amalia, St. Thomas (483); shady places on Morro Hill, Santiago de Cuba (1082), and Pedernales Point, Isle of Pines (1444); grassy fields along Bodden Bay road, Grand Cayman (1351); and streets of Progreso, Yucatan (1730).

Solanum persicæfolium Dun. Hist. Solan. 185.
High woods back of Charlotte Amalia, St. Thomas (449), and at Guanica, Porto Rico (707), agreeing with No. 645 Sintenis from Cabo Rojo.

Solanum persicæfolium angustifolium Dun. *loc. cit.*
Rocky south shore of Culebras Island (620), agreeing with No. 646 Sintenis from Cabo Rojo.

Solanum racemosum Jacq. Enum. Pl. Carib. 15.
Stony scrubland at Pedernales Point, Isle of Pines (1415).

Solanum Seaforthianum Andr. Bot. Rep. t. 504.
Grassy fields east of San Domingo city (858).

Solanum torvum Sw. Prod. Veg. Ind. Occ. 47.
Old fields at Caguas, Porto Rico (197).

Solanum verbascifolium Linn. Sp. Pl. 184.
Dry slopes of Morro Hill, Santiago de Cuba (1098); and dry opens in woods, center of Cozumel Island (1547), where it is called "Xaxox": "Distended Cat's-foot," referring to the form of the leaves, and claw-like spines.

Datura Metel Linn. Sp. Pl. 179.
Indigenous at Guanica, Porto Rico (712).

Datura Stramonium Linn. *loc. cit.*
Indigenous in dry fields south of Charlotte Amalia, St. Thomas (491, 505), where it is locally known as "Fire-weed."

Cestrum diurnum Linn. Sp. Pl. 191.
In coco groves and upon the tableland at "The Creek," Cayman Brac (1192), and in open woods center of the island of Cozumel (1539).

Nicotiana Tabacum Linn. Sp. Pl. 180.
Apparently indigenous in scrubland at Pedernales Point, Isle of Pines (1435).

SCROPHULARIACEÆ.

Verbascum Thapsus Linn. Sp. Pl. 127.
Frequent in dry fields near Walsingham and at Pagets, Bermuda; plants usually low, 20-40 cm. (68).

RUSSELIA JUNCEA Zucc. in Flora 15 (1832): 99.

Hedgerow at Cataño, Porto Rico (183), probably planted, at least escaped.

Monniera dianthera (Sw.) comb. nov.

Lindernia Sw. Prod. Veg. Ind. Occ. 92 (1788). *Herpestis chamædryoides* Rth. Gathered with the next (1525) at the Caleta, Cozumel; rare.

MONNIERA MONNIERA (L.) Britton Pterid. & Sperm. N. A. 292.

Gratiola L., *Herpestis* H. B. K. Moist places near the shore at Cataño, Porto Rico (177), and near the Caleta, Island of Cozumel (1525).

CAPRARIA BIFLORA Linn. Sp. Pl. 628.

Dry fields about Hamilton, Bermuda (120), roadsides about Caguas (217) and Guanica (710), Porto Rico, and Charlotte Amalia, St. Thomas (421); fruits short pedicelled, leaves average 4 x 1.6 cm., sharply and evenly serrate, stem strongly pilose in the channels. Sides of Morro Hill, Santiago de Cuba (1076); fruit pedicels the length of the strongly ciliate calyx, sepals linear, one-third longer than the capsule, whole plant pilose, leaves sharply gross-serrate, 3 x 1.3 cm. About the Caleta, Cozumel, in forest and scrubland (1513, 1535); densely foliate, leaves 3 x 1.3 cm., sharply serrate above the middle, whole plant finely pubescent, pedicels filiform, nearly three times the length of the fruit. Interior of Yucatan at Chichen Itza (1625); whole plant canescent, leaves few and scattering, 3.5 x 1.5 cm., irregularly serrate, fruits very short pedicelled. Roadsides and open lands about Progreso (1732); plants low, densely large-foliate (6.5 x 3.2 cm.), canescent, pedicels nearly twice the length of the capsules, filiform.

CAPRARIA SEMISERRATA BERTERII (A. de C.) Bth. in de C. Prod. 10:429.

Dry fields center of Grand Cayman (1364). Shrubby, stem whitish, branches scattered-pilose above the middle; leaves smooth above and beneath, narrowly lanceolate (averaging 4 cm. x 6 mm.), sessile or nearly so, narrowing to a sharp cusp, margins entire *ciliate*, pedicels filiform, thrice the length of the fruits, ciliate, *1-4 from each leaf axil*, sepals linear, *at last shorter than the carpels*, bracts as long as the flowering pedicels, carpels scrobiculate.

SCOPARIA DULCIS Linn. Sp. Pl. 116.

Dry fields in the suburbs of San Domingo (807).

VERONICA ARVENSIS Linn. Sp. Pl. 13.

Dry fields and meadows about Hamilton, Bermuda (137).

Gerardia cereifera sp. nov.

Annual, glabrous, leaves linear, 2.5-3.8 x .25 cm., entire, subopposite on the branches, scabrous above with white wax-like scabræ, which become massed at the free margin of the leaf, racemes few-flowered open, pedicels very short, about half the length of the calyx tube, calyx thin, prominently veined, the teeth deltoid, blunt, corolla about four times the length of the calyx, softly, densely and finely

short-pubescent, the margins of the lobes short-ciliate, bracts as long as the pedicel and constricted lower portion of the calyx-tube.

Plants 15-30 cm. high, diffusely branched and appearing somewhat like G. peduncularis Bth., from which this species clearly differs in its leaves, pedicels, and calyx. Dry, rocky, sun-burnt soils south of the lagoon near Progreso, Yucatan (1702).

BIGNONIACEÆ.

Tecoma stans Juss. Gen. 139.

Borders of woodlands at Caguas, Porto Rico (246); above Charlotte Amalia, St. Thomas (458), and on the west side of Morro Hill, Santiago de Cuba (1093).

Pithecoctenium Aubletii Splitg. in Hœv. & De V. Tijd. 9:12.

Climbing in high, open trees at Chichen Itza, Yucatan (1638), where the fruits are called X-tabay or "Wood-nymph," on the supposition in fiction that the fairies use the pods as combs for the hair; a use that prevails even to-day among the Indian women. Leaves large, 10-12 cm., strongly cordate, the deltoid apex 2 cm. long by 1.5 cm. broad at the base. Fruits 14-20 x 5-7 cm.; seed, including the wings, 3-3.5 x 7.8 cm.

Tabebuia leucoxylon (Linn.) de C. Bibl. Univ. Genev. 17:131,212.

Bignonia Linn. *Tecoma* Mart. Shores of the lagoon at the southwest point of Cayman Brac (1214), and maritime rocks of Spot Bay, Grand Cayman (1361). Agrees with Wright, Cuba, 1339.

GESNERACEÆ.

Rhytidophyllum tomentosum (Linn.) Mart. Nov. Gen. et. Sp. 3:39.

Gesnera Linn. Seaside of Morro Hill, Santiago de Cuba (1072).

ACANTHACEÆ.

Tubiflora squamosa (Jacq.) Kuntze Rev. Gen. 500.

Verbena Jacq. Open woods, Chichen Itza, Yucatan (1622). In full flower and appearing like a primrose; flowers pink, large, 7 cm. diam., the appearance of the flower bracts vary greatly on the same plant, one spike having no ciliæ at all on the margins of the bracts, another having all the bracts strongly ciliate; plants, as a whole, glabrous; spikes all simple and from the rosulate base.

Thunbergia alata Boj. Sims. Bot. Mag. t. 2591.

Hedgerows, environs of Caguas, Porto Rico (210) and San Domingo city (876); leaves small 4-5 x 2.5-3.5 cm.; sharply hastate, narrow at the sinus; petioles two-thirds the length of the laminæ. Rich soil near Port Antonio, Jamaica (970); climbing over hedges near dwellings, leaves varying from reniform to strongly and sharply hastate 6-9 x 4.5-6 cm.

Thunbergia fragrans Roxb. Pl. Corom. 1:47.

Two forms collected on hedgerows near Port Antonio, Jamaica

(914, 968); the first with the sharply hastate leaves short (5.5-7 cm.), bilobate at the base and apiculate at the apex (T. Dregeana?); petioles often longer than the leaves, and peduncles 6-10 cm. long. The other with lanceolate-cordate-hastate leaves, long pointed, 5.5-9 x 2-3.5 cm.; petioles about one-half the length of the laminæ.

BRAVAISIA TUBIFLORA Hemsl. Hook Ic. Pl. t. 1516.

East shore of Cozumel Island near the ruined temple only (1580), and along the upper beach near Progreso, Yucatan (1733). This species grows as a spreading shrub about 4-6 feet high. I have never seen it even appear tree-like as Dr. Gaumer reported to Prof. Hemsley. It is abundant where found, but its localities are infrequent.

Blechum Blechum (Linn.) *comb. nov.*

Ruellia B. Linn. Syst. ed. x:1150. *B. Brownei* (Sw.) Juss. Suburbs of Port Antonio, Jamaica (898); leaves 3.5-5 x 1.5-2.5 cm., strigose-hairy, margin of bracts ciliate. The Creek, Cayman Brac (1174); leaves 6-9 x 3.5-5 cm. Bodden Bay Road, Grand Cayman (1328); leaves 3-3.5 x 1.2-1.4 cm. Near San Miguel, Cozumel (1506); leaves broadly ovate-lanceolate 6 x 4 cm.; distantly strigose-hairy.

RUELLIA TUBEROSA Linn. Sp. Pl. 635.

Pasture lands at Guanica, Porto Rico (730). Slopes of San Juan Hill, Santiago de Cuba (1052). Center of island of Grand Cayman (1388). These specimens only differ in the former being more nearly glabrous, in none is the capsule pubescent.

RUELLIA PANICULATA Linn. Sp. Pl. 635.

Dry sandy fields and rocky barrens near Progreso, Yucatan (1685).

TETRAMERIUM HISPIDUM Nees. de C. Prod. 11:468.

Plentiful in dry sandy fields near Progreso, Yucatan (1683); the usual form of the species.

HENRYA COSTATA A. Gray. Proc. Am. Acad. 21:406.

Ditches and along the lagoon at Progreso, Yucatan (1661).

DIAPEDIUM ASSURGENS (Linn.) Kuntze Rev. Gen. 485.

Justicia a. Linn. *Dicliptera a.* Juss. Plentiful in fields about El Caney (1041) and at the base of Morro Hill (1095), Santiago de Cuba; at the Caleta (1521) and on the east shore of Cozumel Island (1602); and in the neighborhood of Progreso, Yucatan (1711).

SIPHONOGLOSSA SESSILIS (Jacq.) Oerst. Kjoeb. Vid. Meddl. 159.

Justicia Jacq., *Rhytiglossa* Nees. *Dianthera* Griseb. Dry fields near Progreso, Yucatan (1656), stunted specimens only at this season.

JUSTICIA PERIPLOCÆFOLIA Jacq. Coll. Suppl. 5 t. 7.

Adhatoda Nees. Roadsides south of Charlotte Amalia, St. Thomas (431); and south shores of Culebras Island (597).

DIANTHERA RUGELIANA Griseb. Cat. Pl. Cub., 196.

D. obtusifolia Griseb. in Pl. Rugel. On old garden spot at Pedernales Point, Isle of Pines (1438).

PLANTAGINACEÆ.

Plantago major Linn. Sp. Pl. 112.
Roadsides and dry fields near Hamilton, Bermuda (123).

Plantago lanceolata Linn. Sp. Pl. 113.
Fields and roadsides at Walsingham, Bermuda (90).

RUBIACEÆ.

Rachicallis Americana (Jacq.) Hitch. Rep. Mo. Bot. Gard., 1893:92.
Hedyotis Americana Jacq. *R. rupestris* de C. On the coral beach rocks of The Creek, Cayman Brac (1178); branches short, 4-9 cm., leaves small, 5-7 mm., and whole plant depauperate as compared with the dense tall masses that almost cover the coral rocks of the east coast of Cozumel. Coast rocks of Spot Bay, Grand Cayman, Pedernales Point, Isle of Pines, and Cape Corientes.

Rondeletia arborescens Griseb. Fl. Br. W. I. 327.
Dry hillsides at Bayamon, Porto Rico (341).

Randia aculeata Linn. Sp. Pl. 1192.
Rocky soil near Bayamon, Porto Rico (343). A large shrub with heavy branches and thick branchlets, very heavily armed with sharp strong spines 1.5-1.7 cm. long, leaves elliptical-ovate, 2.5 x 1.5 cm. drying green, and fruits 1 cm. in diameter. In fruit only. Fields bordering Bodden Bay road beyond Spot Bay, Grand Cayman (1319) leaves elliptical, coriaceous 3-5 x 1.5-2 cm.

Randia Xalapensis Mart. & Gal. Bull. Acad. Brux. xi, 1:239.
Border of the lagoon Southwest Point, Cayman Brac (1203), not in flower nor fruit.

Gonzalea spicata (Lam.) de C. Prod. 4:437.
Lygistum spicatum Lam. Dry hillsides at Bayamon, Porto Rico (354), with racemes 30-35 cm. long.

Hamelia patens Jacq. Pl. Carib. 16.
Hedgerows near San Domingo city (823). Pedernales Point, Isle of Pines (1412). Margins of woodlands near San Miguel, Cozumel (1490).

Erithalis angustifolia de C. Prod. 4:464.
Environs of Georgetown (1251) and Spot Bay (1360), Grand Cayman. Leaves oblong-lanceolate or lanceo-spatulate, 2-3.5 x 1-1.5cm.

Erithalis fruticosa Linn. Syst. ed. x, 930.
Ratones Island, Port of Ponce, Porto Rico (652, 653). The usual form, leafy at the ends of the branches, leaves ovate, 4-5.5 x 2.5-3 cm.

Erithalis fruticosa odorifera (Jacq.) Griseb. Fl. Br. W. I. 336.
E. odorifera Jacq. A larger growth than the species, with odorous white flowers, and broadly-ovate leaves, 8.5-10.5 x 4-5.5 cm., rounded at the apex. Sand dunes at Santurce, Porto Rico (279).

CHIOCOCCA RACEMOSA Linn. Syst. ed. x:917.

Borders of a low swale at Pagets, in which position it appears natural, or at least seeded-in through the agency of birds, the location being far from dwellings or cultivated ground, Bermuda (47). Leaves ovate-coriaceous, 6-9 x 3-4 cm., inflorescence paniculo-racemiform.

Scolosanthus Sagræanus (Griseb.). Comb. nov.

Randia S. Griseb. Cat. Pl. Cub. 122. *S. crucifer* Wr. Sauv. Fl. Cub. 67. Pagets, Bermuda (48). Only one plant seen, gathered from a dry beach. Dry rising beach on south shore of Culebras Island (646).

STRUMPFIA MARITIMA Jacq. Pl. Carib. 28.

Plentiful on maritime rocks in the zone of spray where it grows from the driest crevices, Pedernales Point, Isle of Pines. The Creek, Cayman Brac (1069). Exceeding plentiful as the only vegetation on the coral shore line of the east coast of Cozumel (1588) where it forms in tangled masses of large extent.

Myrstiphyllum horizontalis (Sw.). Comb. nov.

(*Psychotria horizontalis* Sw. Prod. Veg. Ind. Occ. 44.) Center of the Island Cozumel (1556*a*), where it is called by the Mayas "Xaxkanan." Leaves paler beneath, 9-11 x 3.5-4.5 cm., long pointed, the tuft of hairs in the vein-axils minute.

MYRSTIPHYLLUM UNDATUM (Jacq.) Hitch. Pl. Baham. 95.

Psychotria undata Jacq. A seashore shrub at Pedernales Point, Isle of Pines (1409).

MORINDA ROYOC Linn. Sp. Pl. 176.

Opens near Spot Bay, Grand Cayman (1280, 1359), where it is called "Rhuburb," and is used in lieu of that drug, and as a yellow dye. A very narrow-lanceolate leaved form, 7-9 x 1-1.2 cm., Pedernales Point, Isle of Pines (1411), the usual form with ovate-lanceolate leaves, 7-11 x 2-2.5 cm.

ERNODEA LITORALIS Sw. Prod. Veg. Ind. Occ. 29.

Sand dunes of Santurce, Porto Rico (266). Shores, southwest point Cayman Brac (1194), branches densely foliate, leaves 3.5 x .6 cm. Near Georgetown, Grand Cayman (1254). Upper beach, coast of Yucatan near Progreso (1715), leaves all fascicled at the tips of the branchlets, 1.5 x .4 cm.

DIODIA RIGIDA Cham. & Schl. in Linnæa 3:341.

Dry fields at El Caney, Santiago de Cuba (1033).

DIODIA TERES Walt. Fl. Carol. 87.

Bodden Bay road, Grand Cayman (1338).

BORRERIA VERTICILLATA (Linn.) Mey. Prim. Fl. Esseq. 83.

Spermacoce Linn. Sandy spots in grassy bottoms at Cataño (148, shrubby, 2 feet high), and Santurce (281), Porto Rico. The usual form of the species.

Spermacoce lævis Lam. Illustr. 1:273.

Our specimens from Port Antonio, Jamaica (948, 991), agree perfectly with H. H. & G. W. Smith's from Mustique Island, Lesser Grenadines, British West Indies.

Spermacoce tenuior Linn. Sp. Pl. 102.

Islets of Hamilton Bay, Bermuda (20, 21). The usual form of the species from dry soil along railroad near Bayamon, Porto Rico (340). Environs of Charlotte Amalia, St. Thomas (437), and San Domingo city (866); roadside at Spot Bay, Grand Cayman (1302); and San Miguel, Cozumel (1478); also in open woods at the Caleta, Cozumel (1531). In the Bermudan specimens the leaves are small, ovate-lanceolate, pointed, 1.5-2.5 x .8-1 cm., and the plants low and spreading; in all the others the leaves are linear-lanceolate, 2.5-4 x .6-.8 cm., and the stems erect, except in No. 1478 the leaves are ovate-lanceolate, 3 x 1.3-1.5 cm.

Spermacoce verticillata Linn. Sp. Pl. 102.

Dry soils near Port Antonio, Jamaica (958), larger and more fully erect than another specimen from the neighborhood of San Miguel, Cozumel (1500). Leaves of the former 3 x .7 cm., of the latter 1.7 x .4 cm., heads 1 cm. diam., and in the latter .8 cm.

CUCURBITACEÆ.

Melothria pervaga (Macf.) Griseb. Fl. Br. W. I. 289.

Landersia Macf. Climbing over low weeds at Caguas, Porto Rico (206).

Momordica Charantia Linn. Sp. Pl. 1009.

Climbing over low shrubs at Cataño (142), south shores Culebras Island (593), and at Guanica (693), Porto Rico. Fences and shrubbery in the environs of St. Thomas (433). Leaves 4-5.5 cm. scattered short-strigose above and on the larger veins beneath, fruit soft-tubercled, peduncular bract 1 cm. from the axil. Suburbs of San Domingo (871), characters of the last except: Leaves 3.5-4 cm. and peduncular bract 2 mm. from the axil. Base of Morro Hill, Santiago de Cuba (1097), leaves glabrous 7-10 cm., peduncular bract 3 mm. from axil. Bodden Bay road, Grand Cayman (1329), characters as in the St. Thomas specimens.

Luffa cylindrica (Linn.) Roem. Syn. Pepon. 63.

Banks and low shrubbery at Caguas, Porto Rico (209).

Cucumis Anguria Linn. *loc. cit.*

Climbing over low herbs on rocky hillside south shore of Culebras Island (641).

Cucumis Melo Linn. Sp. Pl. 1011.

In a washed-out stream bed far from habitations or cultivated lands on the south shores of Culebras Island (584). Apparently native though probably an escape.

CAMPANULACEÆ.

LOBELIA BERLANDIERI de C. Prod. 7:367.

Open woods at Chichen Itza, Yucatan (1624), agrees perfectly with Berlandier's 3177 from Matanzas, Mexico.

LOBELIA CLIFFORTIANA Linn. Sp. Pl. 931.

Open fields at Caguas, Porto Rico (213, 222). Open waste places and banks near Port Antonio, Jamaica (990). Racemes 10-20 cm. long, pedicels 1 cm., leaves 2.5 x 1.2 cm.

LOBELIA MARTAGON (Griseb.) Hitch. Rep. Mo. Bot. Gard. 1893:103.

Tupa Griseb. Rich grounds about Port Antonio, Jamaica (920). Specimens agree well with the characters given by Grisebach except that the flowers are green, not purple nor even lurid, the deltoid acuminate calyx lobes rarely serrulate, the corolla tube thrice as long as the calyx lobes and the leaves larger than described. Calyx lobes 3.5 mm., corolla tube 11.5 mm., raceme 30 cm. long, cauline leaves 18-24 x 4-4.5 cm.

ISOTOMA LONGIFLORA (Linn.) Presl. Prod. Lobel. 42.

Lobelia L. Hillsides at Bayamon (308), and Caguas (242), Porto Rico, corolla 12 cm. long. Banks common about Port Antonio, Jamaica (908). The usual form of the species.

GOODENIACEÆ.

SCÆVOLA LOBELIA Murr. in Linn. Syst. ed. xiii :178.

Lobelia Plumieri Linn., *S. Plumieri* Vahl. Dunes of the coast at Santurce, Porto Rico (271). Fine specimens with very thick leaves, from the shores near Progreso, Yucatan (1647). One individual only on the Alacran Shoals near the foot of the grave on Perez Island (1765).

COMPOSITACEÆ.

VERNONIA ARBORESCENS (Linn.) Sw. Fl. Ind. Occ. 2:1320.

Conyza Linn. Mountain woods back of Charlotte Amalia, St. Thomas (551).

VERNONIA ARBORESCENS DIVARICATA (Sw.) Griseb. Fl. Br. W. I. 353.

V. divaricata Sw. Tableland above The Creek, Cayman Brac (1161), where it is called "Christmas-bush."

VERNONIA PUNCTATA Sw. Wikst. Vet. Acad. Handl. Stockh. 1827:72.

Mountain woods back of Charlotte Amalia, St. Thomas (522.)

DISTREPTUS SPICATUS (Juss.) Cass. Bull. Soc. Philom. 1817:66.

Elephantopus Juss. Sandy fields near Caguas, Porto Rico (198); mountain woods back of Charlotte Amalia, St. Thomas (555); near Port Antonio, Jamaica (982, 1127); the 1-serial unequal pappus bristles, two of which are elongated and twice reflexed, together with the interrupted racemose-spicated inflorescence which gives the plants a far different habit aspect from Elephantopus seems sufficient reason for separating this genus.

Elephantopus tomentosus Linn. Sp. Pl. 814.

E. scaber Linn. Sandy fields near Caguas, Porto Rico (194); mountain woods back of Charlotte Amalia, St. Thomas (552); and fields near San Domingo city (782).

Ageratum conyzoides Linn. Sp. Pl. 839.

Moist ditches at Caguas, Porto Rico (208); and near Port Antonio, Jamaica (884, 962).

Eupatorium conyzoides Vahl. Symb. Bot. 3:96.

Rich soil at Caguas, Porto Rico (203, 216); in the environs of San Domingo city (840, 857); El Caney (1035), bay shores near Santiago de Cuba (1004), and on the tableland above The Creek, Cayman Brac (1187). Old fields near San Miguel, Cozumel (1489).

Eupatorium fœniculaceum Willd. Sp. Pl. 3:1750.

Artemisia capillifolia Lam. Among the coast shrubbery at Pedernales Point, Isle of Pines (1410).

Eupatorium Guadalupense Spreng. Syst. 3:414.

E. paniculatum Schrad. Moist grounds near Port Antonio, Jamaica (902). Old pasture at Caguas, Porto Rico (224).

Eupatorium hebebotrya Hemsl. Biol. Centr. Am. Bot. 2:95.

Moist soil near the Caleta, Cozumel (1510), where it is called "Xtokabal," which may be freely translated "Bleeding Cherry," though the application is not so evident as that of Maya plant names in general. The plant here grows as a tree with a trunk 5 to 10 cm. in diameter, and a height of 3-8 meters. A decoction of the bark, leaves and flowers is used as a domestic remedy for gonorrhœa.

Eupatorium ivæfolium (Linn.) Syst. Pl. ed. x:1205.

In the arid, stony scrubland south of Progreso, Yucatan (1688).

Eupatorium Klattii sp. nov.

Slender, erect, slightly strigose-villous above, branches slender, ascending; leaves sharply serrate except the truncate base, not glandular-dotted, trinerved, cuneate acuminate, strigose-hairy beneath, heads few, 12-flowered, short pedicelled, receptacle globose, involucral scales rounded and ciliolate at the tip all alike, green 3-striate, the interior longer, achenium faintly angled, smooth between, not scabrous on the angles. Named in honor of the late Prof. Dr. F. W. Klatt.

Near E. conyzoides Vahl., from which it strongly differs in its slender habit, ascending densely foliate branches with a simple few-flowered corymb at the tips, its smaller heads and smooth achenia. Branches 10-25 cm., internodes 1-3 cm., petioles .5-1 cm., leaves 2.5 x 4 - 3 x 4.5 cm., corymbs 6-18-flowered, peduncles .5-1 cm., pedicels .5-1 cm., heads 6-7 mm. long, 2-3 mm broad, achenia 3 x .3 mm. (in E. conyzoides 4 x .5 mm.) Shore of Santiago Bay, Cuba (1126).

Eupatorium repandum Willd. Sp. Pl. 3:1767.

Woodlands on the mountain back of Charlotte Amalia, St. Thomas (532).

EUPATORIUM SINUATUM Lam. Encyc. 2:407.
E. canescens Vahl. Bay shores at Guanica, Porto Rico (694, 706).

EUPATORIUM VILLOSUM Sw. Prod. Veg. Ind. Occ. 111.
Seashore upper beach at Georgetown, Grand Cayman (1401).

WILLOUGHBYA CORDIFOLIA (L.) Kuntze Rev. Gen. 372.
Cacalia Linn. *Mikania* Willd. High mountain woods back of Charlotte Amalia, St. Thomas (516).

Willoughbya ranunculifolia (Rich.) *comb. nov.*
Mikania A. Rich. Fl. Cub. Fan. 2:45. Stony shores at Pedernales Point, Isle of Pines (1421).

WILLOUGHBYA SCANDENS (L.) Kuntze Rev. Gen. 371.
Eupatorium Linn. *Mikania* Willd. Moist soil near Port Antonio, Jamaica (947, 956).

ECLIPTA ALBA (Linn.) Hassk. Pl. Rar. Jav. 528.
Verbesina Linn., *Eclipta vesta* L., *E. procumbens* Mx.
Railroad embankment at Bayamon, Porto Rico (322); roadside near San Domingo city (815); and gravelly bank near Port Antonio, Jamaica (941).

CRASSINA MULTIFLORA (L.) Kuntze Rev. Gen. 331.
Zinnia multiflora Linn. Undoubtedly native; found far from habitations on the shore of Guanica Bay, Porto Rico (690).

AGERATUM PALEACEUM Hemsl. Biol. Centr. Am. 2:83?
Doubtfully placed here, from description, by Prof. B. L. Robinson. Woodlands about Chichen Itza, Yucatan (1635).

PARTHENIUM FRUTICOSUM Less. in Linnæa 5:152.
Fide Prof. B. L. Robinson. Border of lagoon south of Progreso, Yucatan (1665).

ALOMIA AGERATOIDES H. B. K., Nov. Gen. et Sp. 4:151.
A very small leaved weak form from Isle of Pines, Cuba (1437). The usual form from San Miguel (1492) and the east shore (1603) of Cozumel.

CONYZA AMBIGUA de C. Flor. Fr. Supp. 468.
Non. H. B. K. On one of the small islets in Hamilton Bay, Bermuda (119). *Fide* Prof. B. L. Robinson.

BACCHARIS HALMIFOLIA Linn. Sp. Pl. 860.
Borders of a boggy place near Paget's, Bermuda (53, 58).

AMBROSIA HISPIDA Pursh. Fl. Am. Sept. Suppl. 743.
A. crithmifolia de C. At Pedernales Point, Isle of Pines, this species grows erect and strict about 1 meter high, but at the northeast point of Cozumel (1577) and on the coast dunes at Progreso, Yucatan (1645), it is prostrate on the sands, always extending itself toward the beach, sometimes 6 meters.

PARTHENIUM HYSTEROPHORUS Linn. Sp. Pl. 988.
This species does not appear indigenous at any of the following

localities, nor, in fact, at any place where I have observed it in the West Indies; although it is credited to these islands by authors, I have never met with it except in the streets of towns and villages: Walsingham, Bermuda (80, 115); Charlotte Amalia, St. Thomas (387, 475); Guanica, Porto Rico (685); San Domingo city (778); Santiago de Cuba (1047), and San Miguel, Cozumel (1572).

Pluchea camphorata (Linn.) de C. Prodr. 5:452.

Erigeron camphoratum Linn. *Conyza camphorata* Ell.

Opens at Pedernales Point, Isle of Pines (1440). Near the Caleta, Cozumel (1532); = *E. petiolata* Cass, the same form also from the borders of the lagoons south of Progreso (1714).

Pluchea odorata (L.) Cass. Dict. Sci. Nat. 13:3.

Conyza odorata Linn. A conspicuous shrubby species, known in Yucatan as "Santa Maria" and used in domestic medicine as a febrifuge as we use "Bone-set" in the north: Cataño, Porto Rico (192); south shore of Culebras Island (577, 589); Ratones Island (656) and Guanica Bay (713), Porto Rico; shores of Santiago Bay, Cuba (1002, 1117); Pedernales Point, Isle of Pines (1414), and the Caleta, Cozumel (1503, 1512).

Leptilon Canadense (L.) Britton Brit. & Brown Ill. Fl. 3:391.

Erigeron Linn. Roadsides at Walsingham, Bermuda (77); Bayamon, Porto Rico (313); Port Antonio, Jamaica (940), and Georgetown, Grand Cayman (1259).

Solidago sempervirens Linn. Sp. Pl. 878.

On the islets in Hamilton Bay, Bermuda (8).

Borrichia arborescens (L.) de C. Prod. 5:489.

Buphthalmium Linn. With the preceding (3), and shores of Grand Cayman near Georgetown (1239).

Borrichia frutescens de C. *loc. cit.*

Seashore at Santurce, Porto Rico (264), and Culebras Island (640).

Borrichia argentea de C. *loc cit.*

Seashore near Port Antonio, Jamaica (985); the shores of Santiago Bay, Cuba (1017); coral rocks at The Creek, Cayman Brac (1176), where it is known as "Lavender;" sandy beach near Georgetown, Grand Cayman (1242, 1247), and on the coral rocks east shore of Cozumel (1586), the last being host of Sorosporium Borrichiæ E. & E. sp. nov.

Wedelia brachycarpa Baker Mart. Fl. Braz. 6, 3:181.

Bed of a dry brook near its mouth, bay shore near Charlotte Amalia, St. Thomas (366).

Wedelia buphthalmoides (de C.) Griseb. Goett. Abh. 7:235.

Anomostephium de C. Shores of the bay near Charlotte Amalia, St. Thomas (405, 408).

WEDELIA LANCEOLATA de C. Prod. 5:541.

Shores of the bay of Culebras (579) and the open sea on the south shore, Culebras Island (639). Our specimens agree well with the description, and have additionally very prominent cottony tufts of long strigose wool at the axils of all the larger veins beneath the leaf.

WEDELIA TRILOBATA (L.) Hitch. Pl. Baham. 99.

Silphium Linn., *W. carnosa* Pers. The first vegetation on the bay beach at Cataño, Porto Rico (143); sea beach and borders of brackish lagoon near Port Antonio, Jamaica (957, 993), and the shores at Georgetown, Grand Cayman (1245).

AMELLUS ASPER(A) (Jacq.) Ktze. Rev. Gen. Pl. 305.

Calea Jacq., *Melanthera deltoïdea* Michx. South shore of Culebras Island (627), and near Georgetown, Grand Cayman (1395).

AMELLUS NIVEUS (L.) Ktze. *loc. cit.*

Bidens Linn., *Melanthera* Small, *M. hastata* Michx. Barren places near Bayamon, Porto Rico (314), open dry ground center of the island of Cozumel (1545), and old fields near Progreso, Yucatan (1723).

SPILANTHES BECCABUNGA de C. Prod. 5:622.

Open grassy places near San Miguel, Cozumel (1494).

SALMEA PTEROBOIDES Griseb. Fl. Br. W. I. 375.

Sandy open places on the south shore of Cayman Brac (1231), and near Georgetown, Grand Cayman (1404).

VERBESINA ALATA Linn. Sp. Pl. 901.

Ditches along public road at Cataño, Porto Rico (328).

UCACOU(A) NODIFLORUM(A) (L.) Hitch. Fl. Baham. 100.

Verbesina Linn., *Synedrella* Gaertn. Roadsides at Caguas, Porto Rico (220), and at Spot Bay, Grand Cayman (1276).

BIDENS ANDICOLA H. B. K. nov. gen. et Sp. 4:237.

Islets in Hamilton Bay, Bermuda (16,24), *fide* Prof. B. L. Robinson.

BIDENS PILOSA Linn. Sp. Pl. 832.

Ditches at Walsingham, Bermuda (81), and seashore at Spot Bay, Grand Cayman (1275), where the plant is known as "Spanish Needles."

BIDENS CYNAPIIFOLIA H. B. K. nov. gen. et Sp. 4:235.

Ditches on hillside south of Charlotte Amalia, St. Thomas (501), *fide* Prof. B. L. Robinson.

BIDENS LEUCANTHA (L.) Willd. Sp. Pl. 3:1719.

Coreopsis Linn. Roadside ditches at Paget's, Bermuda (43); seashore at Cataño, Porto Rico (144, 166); near Port Antonio, Jamaica (945), with very large ray florets; at Cape Corientes, Cuba (1446, 1464).

Cosmos caudatus H. B. K. nov. gen. et Sp. 4:240.
Roadside in damp soil, center of island of Grand Cayman (1353.)

Tridax procumbens Linn. Sp. Pl. 900.
Dry hillside at Morro Castle, Santiago de Cuba (1066).

Flaveria linearis Lag. Gen. et. sp. nov. 33.
A very robust and foliose form collected in an open field south of Progreso, Yucatan (1652), and on the beach of Perez Island, Alacran Shoals (1753).

Broteroa trinervata (Willd.) Pers. Ench. Bot. 2:498.
Naumbergia trinervata Willd. *Brotera Contrayerba* Spr. *Flaveria repanda* Lag. Ditches near Progreso (1653) and along the railroad south of the lagoon crossing, Progreso (1699, 1731), Yucatan.

Porophyllum Millspaughii Robinson* sp. nov.
Shrub or undershrub; stems and primary branches terete, covered with a purplish-gray smoothish cortex, widely and dichotomously forked (through the habitual tendency to abortion in the terminal bud); leaves elliptical, rounded at both ends, coarsely crenate through the intrusion on each edge of 2 or 3 shallow bays, membranaceous, thin, not paler beneath, 2.2 to 3.3 cm. long, 1.4 to 1.8 cm. broad; glands intra-marginal, the lateral lunate, subtending the bays, the terminal one linear, coincident with the apex of the midnerve, other glands upon the surface of the leaf wholly wanting; petioles slender, 5 mm. long; peduncles 1.3 to 1.8 cm. long, slender, scarcely thickened upward; involucral bracts oblong-linear, 1.2 cm. long, scarious-margined, usually browned at the tip; glands dark, linear; usually biseriate, heads usually nodding in anthesis; flowers about 18, greenish-white; corolla 9 mm. long, puberulent upon the outer surface; achenes purplish black, somewhat attenuate and (under a lens) upwardly hispid, 8 mm. long. Progreso, Yucatan, 5 Mar., 1899 (1648). Types in Herb. Field Col. Mus. No. 61648, and Herb. Gray.

This species is obviously related to *P. Ervendbergii*, Gray, and *P. nummularium*, D. C. It is distinguished, however, by the absence of the irregularly distributed superficial glands which are present on the leaves of both the species mentioned. It also has somewhat shorter peduncles, and larger leaves.

Pectis Cubensis (Rich.) Griseb. Cat. Pl. Cub. 156, *fide M. A. Fernald.*
Laurentia Rich. Fine full masses of this species were found in the sand of the roadside at Spot Bay, Grand Cayman (1279), but not seen elsewhere on the island. It is called "Flat-weed," and is used in infusion as a stomachic tonic.

Erechthites hieracifolia (L.) Raf. de C. Prod. 6:294.
Senecio hieracifolius Linn. In an old field near Pedernales Point, Isle of Pines (1418).

*Prof. B. L. Robinson, Gray Herbarium, Cambridge, Mass.

EMILIA SONCHIFOLIA (L.) de C. Prod. 6:302.

Cacalia Linn. Railroad embankment and dry stony roadway near Bayamon, Porto Rico (303, 318); stony bed of a dry brook near Charlotte Amalia, St. Thomas (466).

CICHORIUM INTYBUS Linn. Sp. Pl. 813.

Roadside banks at Walsingham, Bermuda (103).

SONCHUS OLERACEUS Linn. Sp. Pl. 794.

Waste ground and open woodlands near Walsingham (74, 95), and near Hamilton (131), Bermuda.

SONCHUS ASPER (L.) All. Flor. Ped. 1:222.

S. oleraceus var. *asper* Linn. Waste grounds at Paget's, Bermuda (63).

LACTUCA INTYBACEA Jacq. Ic. Pl. Rar. 1 t. 162.

Brachyramphus intybaceus de C. Tall specimens, 1.5 meters high, from hillside at the bay of Guanica, Porto Rico (759), and Morro Hill, Santiago de Cuba (1067, 1070). Small, but fully developed, specimens, 15-20 cm., simple stemmed, from grassland near Progreso, Yucatan (1701), together with taller branchy plants (1706, 1709) from the same locality.